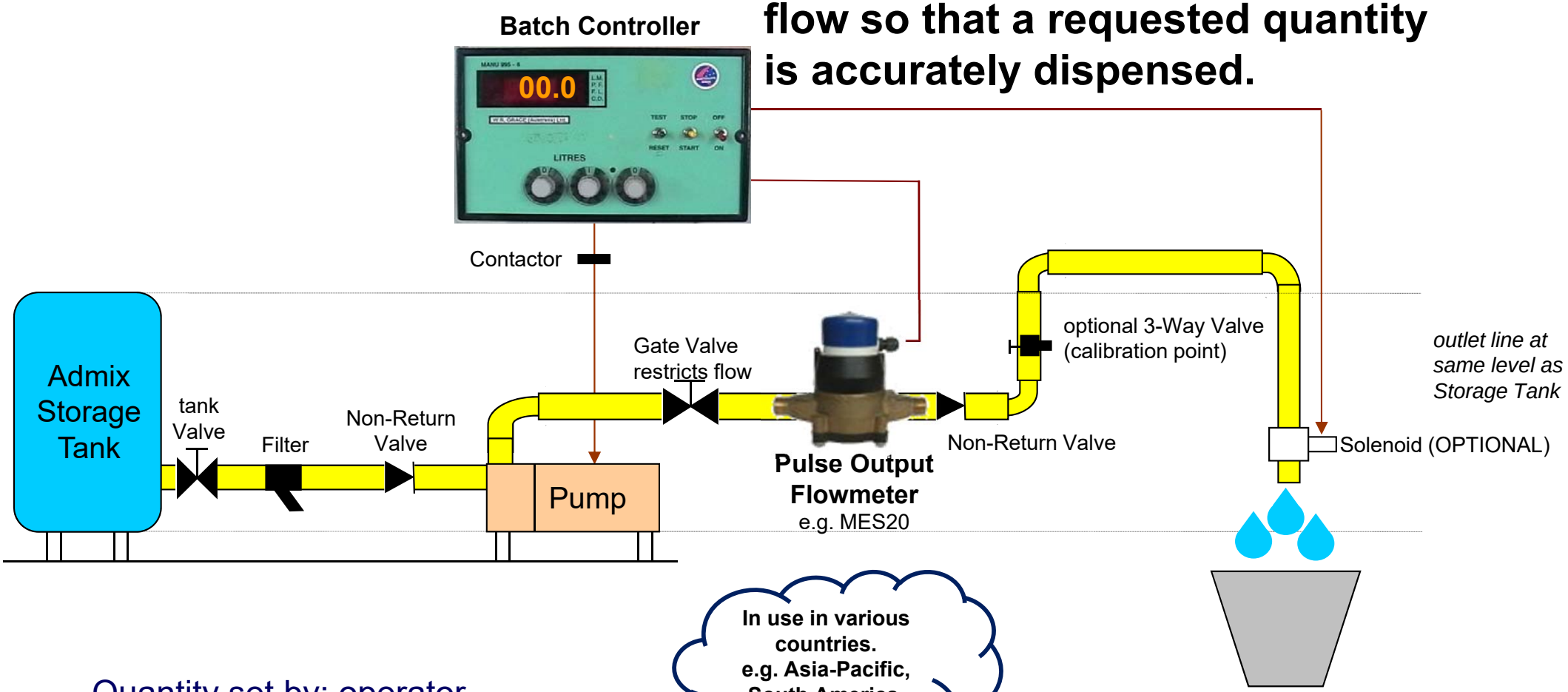
7.
Semi-Automatic Batching with Batch Controllers

Semi-Automatic Batching

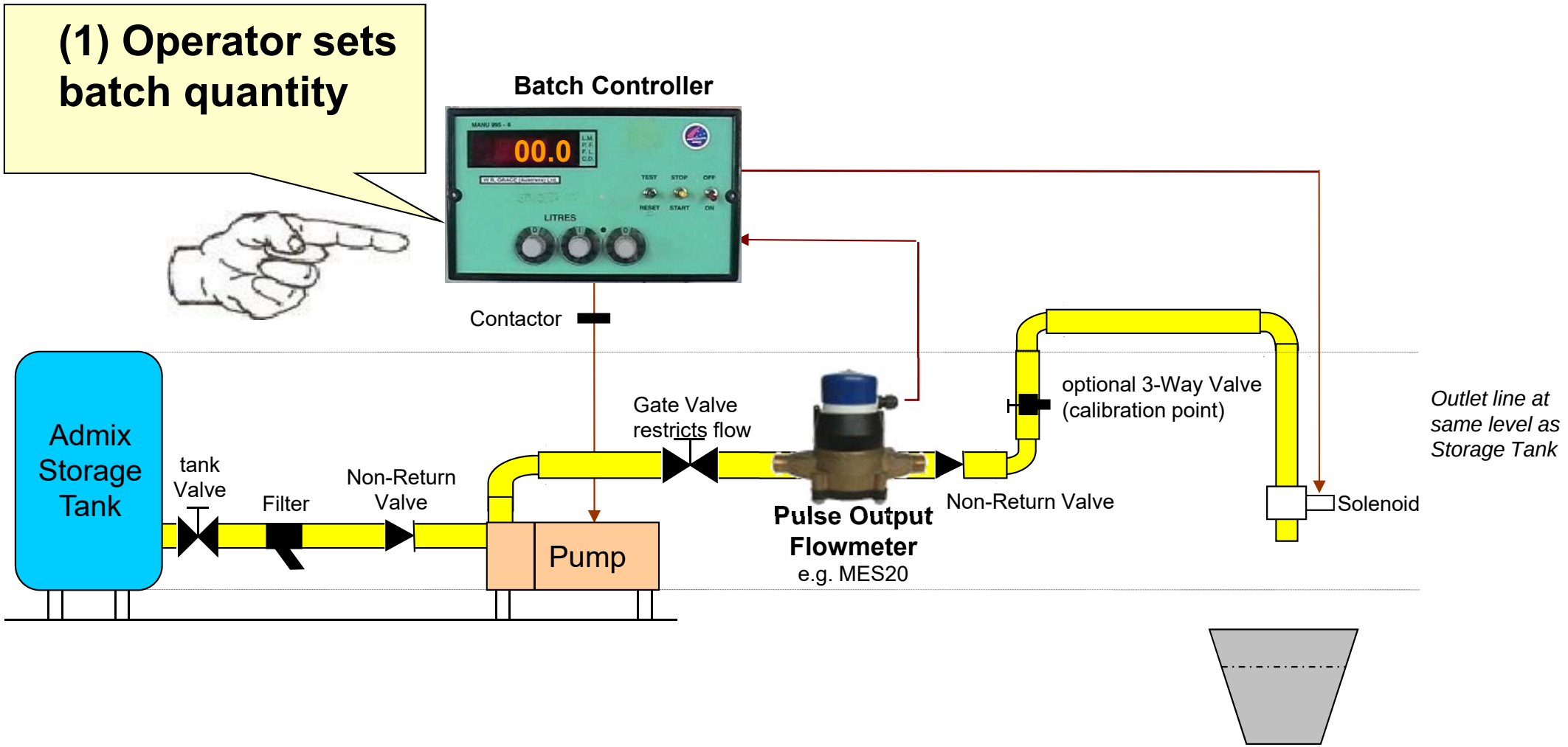
Batch Controller starts and stops flow so that a requested quantity is accurately dispensed.



Quantity set by: operator
Delivery controlled by: batch controller

In use in various countries. e.g. Asia-Pacific, South America, Middle-East

Semi-Automatic Batching



Semi-Automatic Batching

All
LEDs off.

(2) Operator presses RESET, then STARTs batch.

Contactor

Batch Controller

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

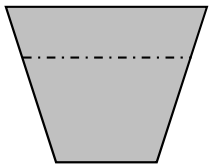
Pulse Output Flowmeter
e.g. MES20

optional 3-Way Valve (calibration point)

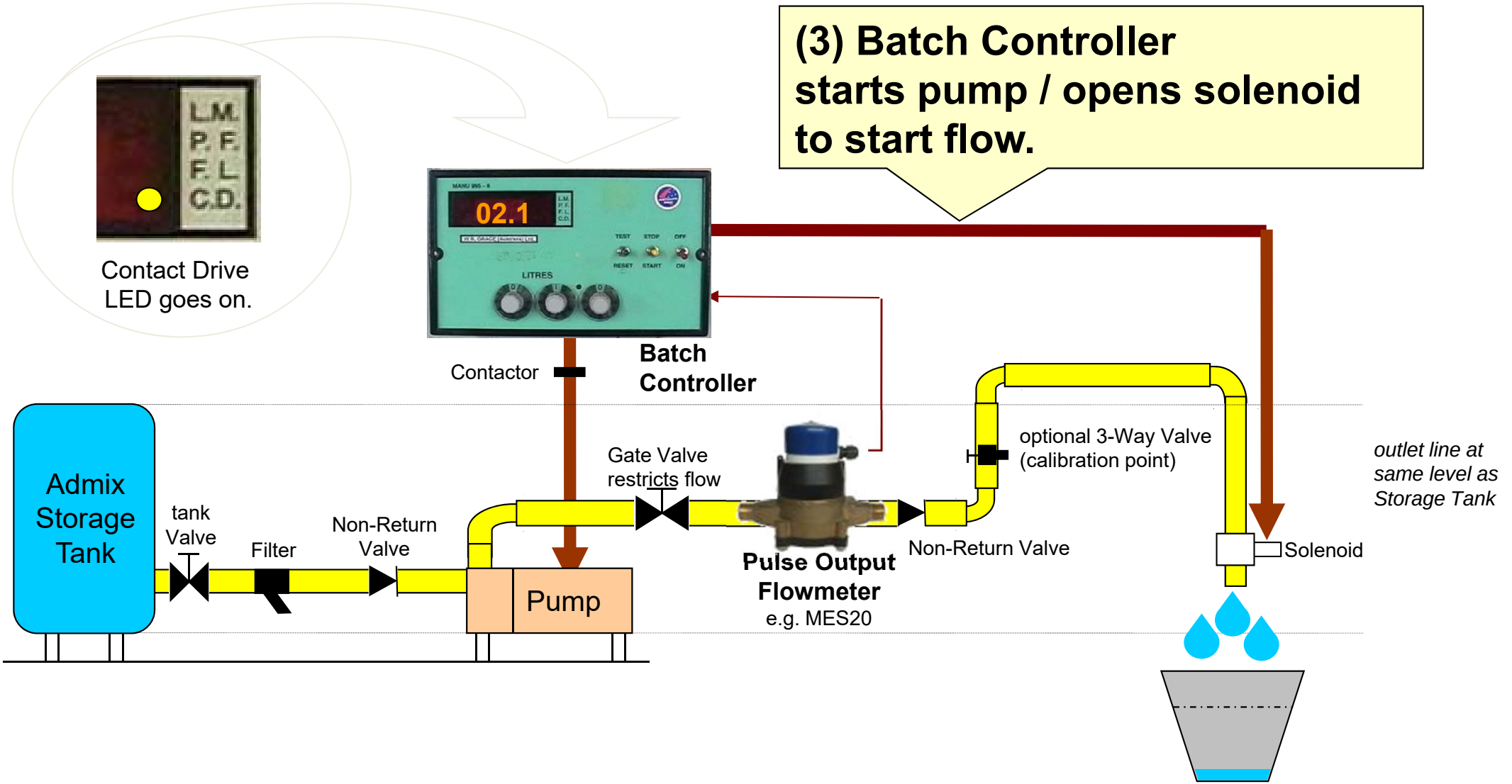
Non-Return Valve

Solenoid

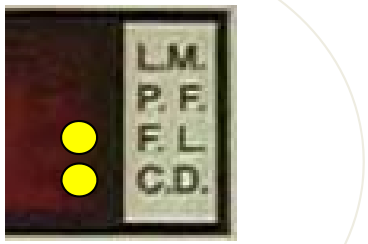
outlet line at same level as Storage Tank



Semi-Automatic Batching



Semi-Automatic Batching



Contact Drive & FLow LEDs on.

(4) Batch Controller monitors pulses from flowmeter to determine quantity delivered.

Batch Controller

Contactor

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

Pulse Output Flowmeter
e.g. MES20

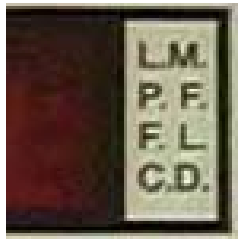
optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

outlet line at same level as Storage Tank

Semi-Automatic Batching



CD, then FL LED, go off.

(5) When desired quantity dispensed, Batch Controller stops pump / closes solenoid to stop flow.

Batch Target was 9.2 litres

Contactor

Batch Controller

Admix Storage Tank

tank Valve

Filter

Non-Return Valve

Pump

Gate Valve restricts flow

Pulse Output Flowmeter
e.g. MES20

optional 3-Way Valve (calibration point)

Non-Return Valve

Solenoid

outlet line at same level as Storage Tank

ME995 Series Batch Controllers - Safety Features

- **LIMIT (LM) LED** - illuminates if:
  - batch cycle reaches locked internal maximum limit, or
  - circuit diagnostics detect internal chip problem, with subsequent automatic shutoff of voltage contact drive.
- **PULSE FAIL (PF) LED** - activates if:
  - no flowmeter pulses arrive within initial 1.5 seconds (variable), or
  - pulses are interrupted or intermittent during batch cycle (fall below variable pulse scanning time, typical 30 Hz) with subsequent automatic shutoff of voltage drive to pump.
- **FLOW (FL) LED** - indicates pulses coming from field flowmeter, or if test is used.
- **CONTACT DRIVE (CD) LED** - output drive activated to pump or solenoid.

Audible ALARM sounds:

- momentarily upon completion of batch cycle,
- continuously if PULSE FAIL or LIMIT occurs LEDs are activated or if overflow runs 1000 ml (variable) past selected batch quantity.

Warning: If Contact or Flow LED indicators are on, but contoller is not counting, discontinue use and call for service.

Batch Controllers – Selection Questions

(1) What is the minimum & maximum batch quantity volumes ?

(2) What is size of the intended connected flowmeter ?

(3) What batch quantity resolution units do you require ?

(4) Is a PLC/computer system being connected to the system ?

(5) What is the display to show – total dose, or delivered batch quantity ?

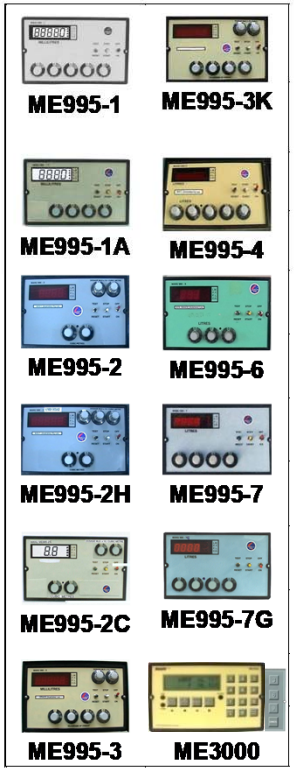
(6) Is Variable Dosage required ? If so:

(7) What dose units do you want ? (Kg's or m3)

(8) What is the maximum dose-rate ?

(hence do you require a maximum internal limited Dose rate fitted ?)

Batch Controllers – configuration options



	Batch Quantity			Dosage			Display		Input from Flowmeter (2)		Suggested Doselimit
Order Code	Units	Increment	Max Setting	Variable Dosage	Units	Max Setting	Shows	Units	PPL Accepted	K-factor Adjustment	
ME995-1	millilitres	10 ml	90000	no	n/a	n/a	batch quantity	millilitres	1000	no	30000 ml
ME995-1A	millilitres	10 ml	9000	no	n/a	n/a	batch quantity	millilitres	1000	no	3000 ml
ME995-2	cubic metres	0.1 cubic metres	9.0	yes	mls x 10 / cubic metre	99x10	total dosage	millilitres	1000	no	200mls/m3
ME995-2H	cubic metres	0.1 cubic metres	9.0	yes	mls x 10 / cubic metre	900x10	total dosage	millilitres	1000	no	2000mls/m3
ME995-2C	cubic metres	0.1 cubic metres	9.0	yes	mls x 10 / cubic metre	99x10	batch quantity	cubic metres	1000	no	200mls/m3
ME995-2CH	cubic metres	0.1 cubic metres	9.0	yes	mls x 10 / cubic metre	900x10	batch quantity	cubic metres	1000	no	2000mls/m3
ME995-3	kg of cement	10 kg	9000	yes	mls x 10 / 100 Kg	99x10	total dosage	millilitres	1000	no	900mls/100kg
ME995-3H	kg of cement	10 kg	9000	yes	mls x 10 / 100 Kg	900x10	total dosage	millilitres	1000	no	20000mls/100kg
ME995-3K	kg of cement	10 kg	9000	yes	mls x 10 / 100 Kg	99x10	batch quantity	kg	1000	no	900mls/100kg
ME995-3KH	kg of cement	10 kg	9000	yes	mls x 10 / 100 Kg	900x10	batch quantity	kg	1000	no	20000mls/100kg
ME995-4	Litres	0.01 L	99.990	no	n/a	n/a	batch quantity	Litres	1000	no	90 litres
ME995-6	Litres	0.1 L	99.9	no	n/a	n/a	batch quantity	Litres	1000	no	90 litres
ME995-7	Litres	1 L	9999	no	n/a	n/a	batch quantity	Litres	1 - 999	yes	9000 litres
ME995-7D	Litres	0.1 L	999.9	no	n/a	n/a	batch quantity	Litres	1 - 999	yes	900 litres
ME995-7G	Litres	0.01 L	99.99	(1)	n/a	n/a	batch quantity	Litres	1000	no	
ME995-7H	Litres	10 L	99990	no	n/a	n/a	batch quantity	Litres	1 - 999	yes	Consult manuFlo
ME3000	ml, L, KL	from 1ml	9,999,999KL	no	n/a	n/a	batch quantity	ml, L, KL	0.001 - 9999.999	yes	For options

Batch controller options: 110vac supply, 24 VDC supply, external command plug (stop/start/reset), PLC/Computer interfaces, 2 product changeover switch.
Notes - (1) : ME995-7G has as standard a 2-product selection switch with central computer hold, and a -5P interface plug. (2) Examples of 1000 pulse/Litre flowmeters are MES20, MEA15, MEK20.

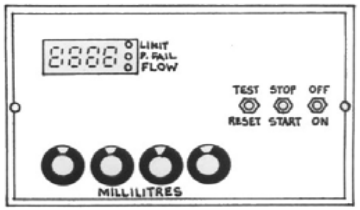
Typical maximum internal limits; are adjustable and configured at time of order

Older Model Batch Controllers – ME188 Series

ME188 Built 1982 to 1994

ME995 Built 1995 to present

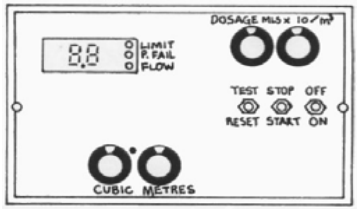
ME188-1



superseded by

ME995-1A

ME188-2



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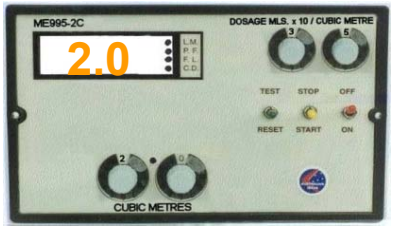
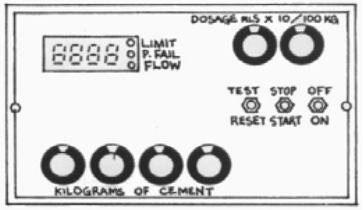


ME995-2C

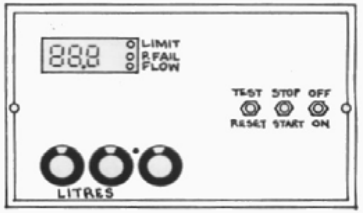
ME188-3



superseded by

ME995-3K

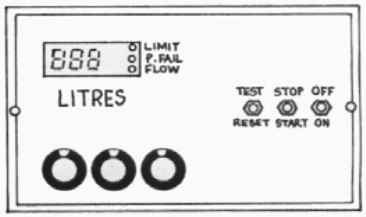
ME188-6



superseded by

ME995-6

ME188-7



superseded by

ME995-7

ME995-2 Batch Controller - Use

- For use with Manu AMM15, MES20 and other 1000 ppL flowmeters
- **Mainly used in computer/PLC controlled batch plants**
- **Set on maximum permitted batch limits**

DOSAGE 35 x 10 mls per m3.
= 350 mls per cubic metre selected

Shows delivered Dose in ML

Batch Quantity up to 9.0, increment 0.1
e.g. **2.0 cubic metres**

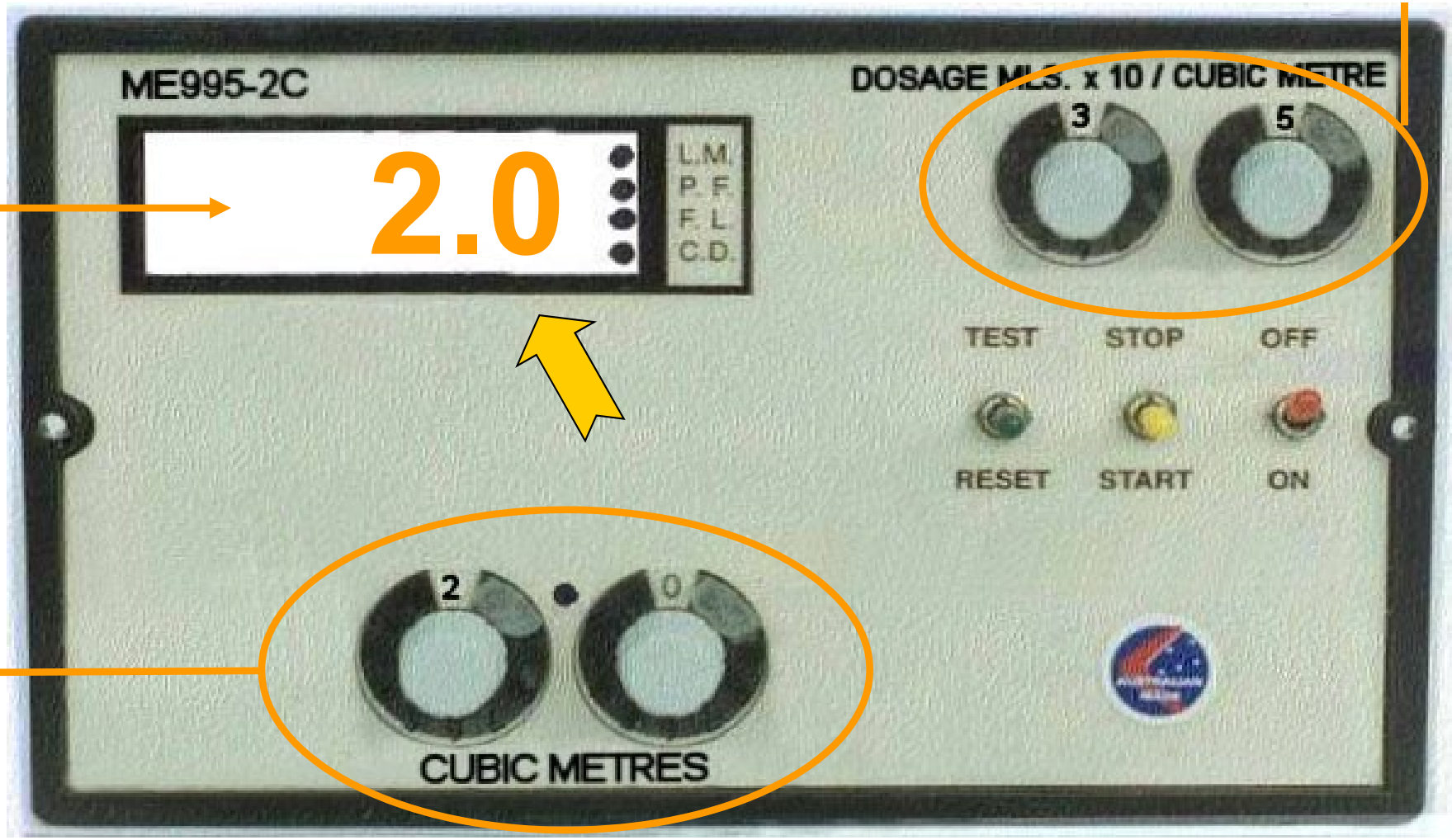
Formula is: 350mls dosage rate x 2.0 m3 load of concrete = 700mls in liquid delivered and shown on display

ME995-2C Batch Controller - Use

- For use with Manu MES20 and other 1000 ppl flowmeters.
- **Mainly used in manual batch plants**

DOSAGE 35 x 10 mls per m3.
= 350 mls per cubic metre selected

Shows delivered Batch Quantity in cubic metres selected



Batch Quantity up to 9.0, increment 0.1 e.g. 2.0 cubic metres

Formula is: 350mls dosage rate x 2.0 m3 load of concrete = 700mls in liquid delivered, and shown in m3 selected on display

ME995-3 Batch Controller

Ideal for Computer plants to compare volumetric display in MLs.

- 5 Digit LED display.
- 4 x LED status indicators.
- Variable doserate selection.
- Display counts in total millilitres of dosage.
- Preact function and preset maximum limit
- Missing pulse detection
- Interchangeable with earlier ME188 models
- For use with Manu MES20, MEA15 1000 ppl flowmeters.
- Optional PLC and computer interface.
- Mainly used in computer/PLC controlled batch plants

		Display	
		shows	units
*	ME995 - 3	total dosage	ml
	ME995 - 3K	batch quantity	kg

Doserate
mls x 10 per 100kg
max 99 x 10

Shows Total
Dosage in ML

Batch Quantity
up to 9000, increment 10

ME995-3 Batch Controller - Use

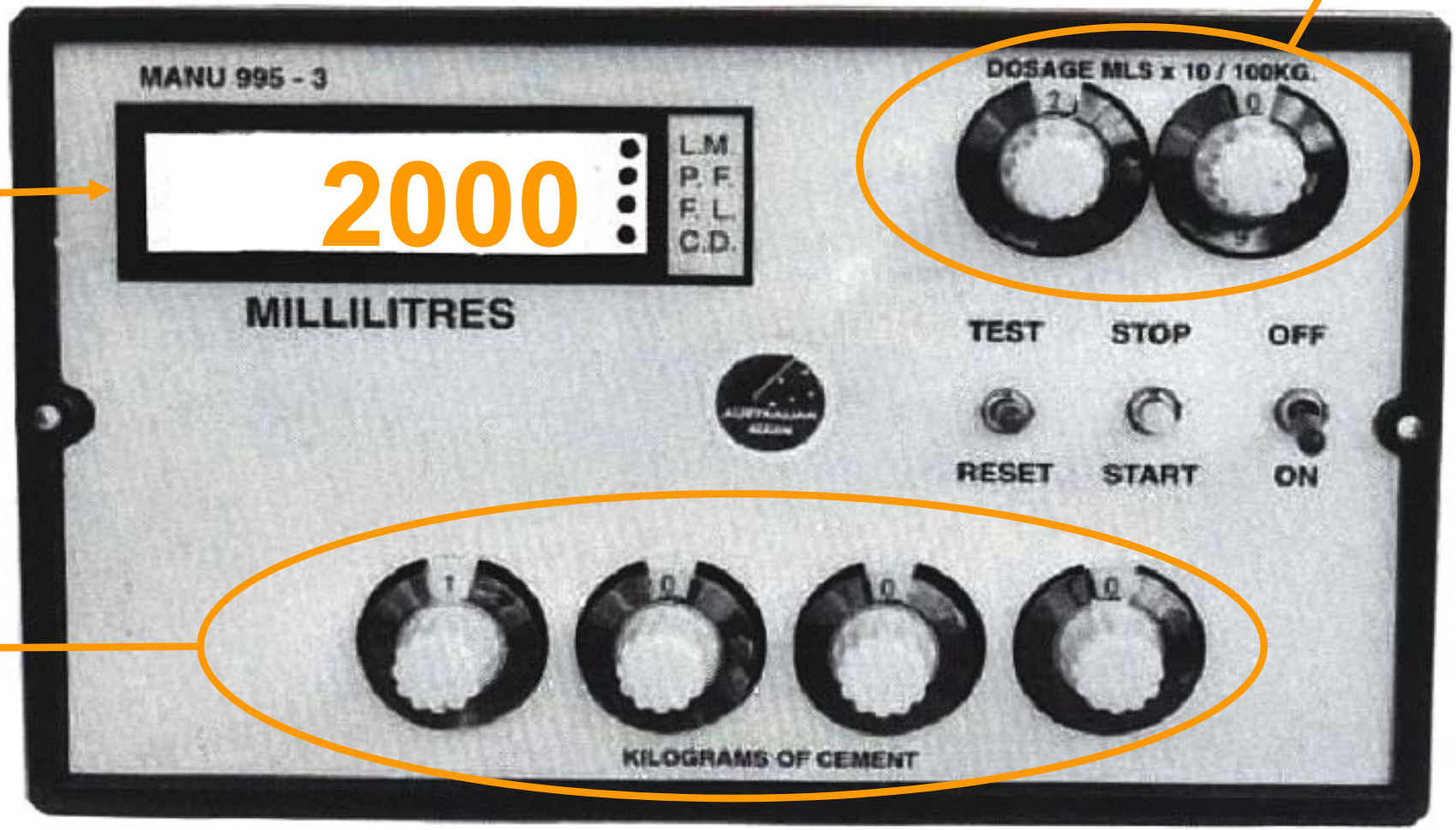
For use with Manu MES20 and AMM20 1000 ppl flowmeters

- **Mainly used in computer/PLC controlled batch plants**
- **Set on maximum permitted batch limit**

DOSERATE
Max 99 x10
e.g. 20 x 10ml/100kg

Shows delivered Dose in ML

Batch Quantity up to 9000, increment 10 e.g. 1000 kg



ME995-3K Batch Controller - Features

- Variable doserate blending preset batch controller
- Rotary knob selector switches, for easy select of:
  - Doserate (top 2 selectors)
  - Batch Quantity (bottom 4 selectors)
- 4 Digit LED display - Display counts upward in 10 kg lots to kilograms of cement selected
- 4 x LED status indicators.
- Preact (overflow deduct) function
- Preset maximum batch limit
- Missing pulse detection safeties
- Contact output drive is via 1 (or optionally 2) relays
- For use with Manu MES20 20mm 1000 ppl flowmeters
- Optional PLC and computer interface
- **Mainly used in manual batch plants**

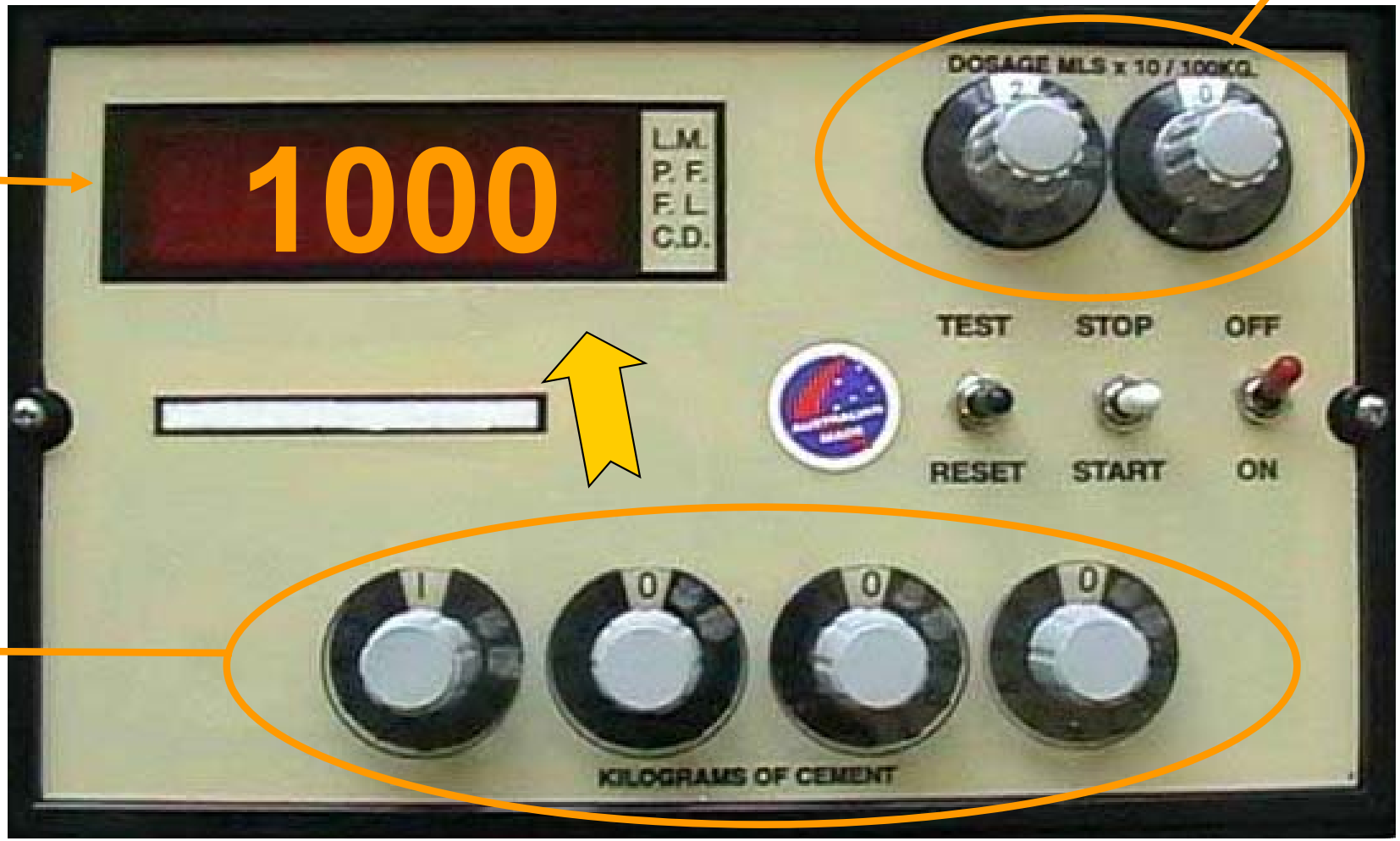
ME995-3K Batch Controller - Use

For use with ManuFlo AMM20 and MES20
1000 ppL flowmeters **(mainly used manual batch plants)**

DOSAGE: 20 x 10 mls.
e.g. = 200mls./100kg

Shows delivered Batch Quantity in kg

Batch Quantity up to 9000, increment 10
e.g. 1000 kg cement.



Formula = 200mls dosage rate x (10 lots of 100KGs) load of cement = 2000mls in liquid delivered, shown in KG selected

ME995 HIGH DOSERATE batch controllers- Use

For use with ManuFlo 1000 ppL flowmeters

(mainly used manual batch plants)

Shows delivered dosed quantity in m3

HIGH DOSAGE: 200 x 10 mls./m3
e.g. = 2000mls./m3

Shows delivered Dosed quantity in KG's of cement

HIGH DOSAGE:
900 x 10 mls./100kg
e.g. = 9000mls./100kg

Batch Quantity up to 9.0 m3

.

Batch Quantity to 9000 kg cement.

WARNING: See pages 88-90 **These units can dose chemical up to 9 litres per m3 or 100KG's of cement.** **ON REQUEST : DOSE LIMITS CAN BE INTERNALLY LOCKED AT NOMINATED SETTING**	**MODELS:** **ME995-2CH** **ME995-2H** **ME995-3KH** **ME995-3H**

Formula = 200mls dosage rate x (10 lots of 100KGs) load of cement = 2000mls in liquid delivered, shown in KG selected

ME995-4 Batch Controller - Use

For use with Manu MES20 and AMM20 1000 ppl flowmeters

Shows delivered Batch Quantity in Litres

Batch Quantity up to 99.990, increment 0.01 L e.g. 3.000 Litres

ME995-6 Batch Controller

For use with ManuFlo AMM20 and MES20 1000 ppl flowmeters

Shows delivered Batch Quantity in Litres

Batch Quantity up to 99.9, increment 0.1 L e.g. 1.0 Litres

ME995-7DS / ME995-7D / ME995-7 Batch Controllers

(with x1 input) K-Factor calibration adjustment precision option.

For use with ManuFlo MES20-S, MES20-S-T, MES25, AMM25 etc
and other flowmeters where pulse output values are NOT 1000 ppl.

K-Factor adjustment U,T,H →
(units/tens/hundreds)
Turn the flat shaft pointer
to the desired calibration
Setting value.
e.g. MES-S-T
UTH = 580 (HTU=085)
i.e. 85 pulses per 0.1 litre.

Pre-act (overflow deduct)

ME995-7D-S 3 dial to 90.0 Litres

ME995-7D 4 dial to 900.0 Litres

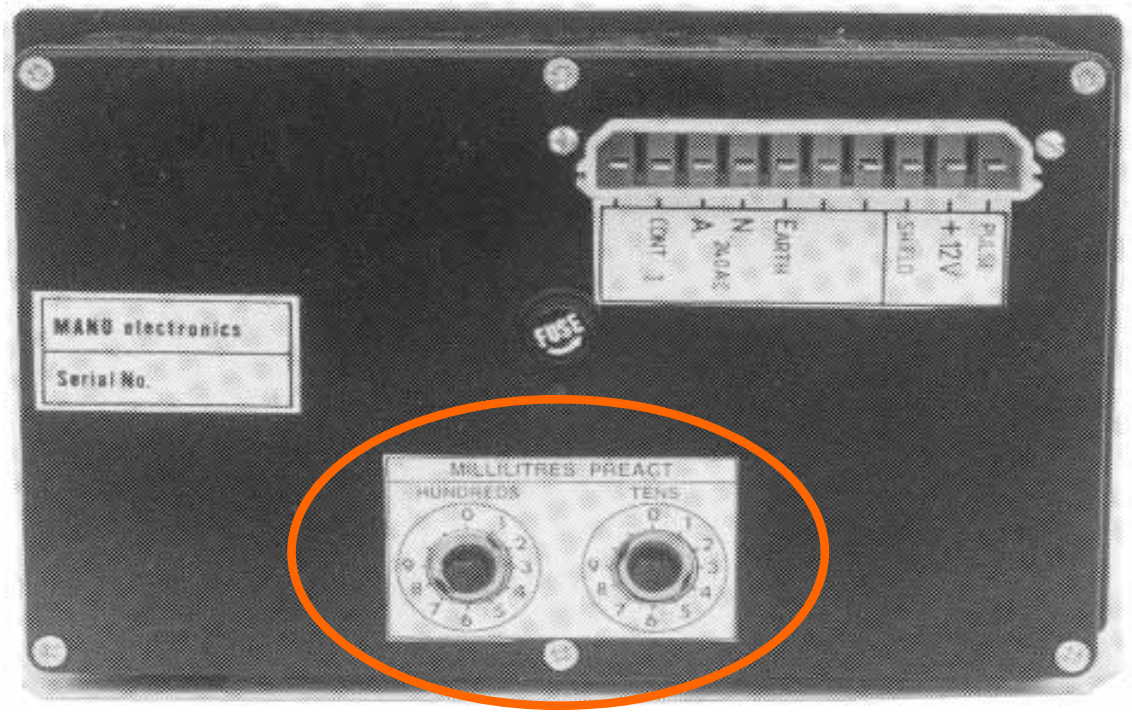
Final Calibration:

- If the liquid collected is higher than value shown on display, then decrease the calibration input set value (K-factor) by the same % difference.
- If the liquid collected is less than value shown on display, then increase the calibration input set value (K-factor) by the same % difference
- Note: Finally then set the Pre-Act to compensate for ant overrun from batch target..

Batch Controller Pre-act Explained

PREACT: Calibrating inflight overflow deduct:

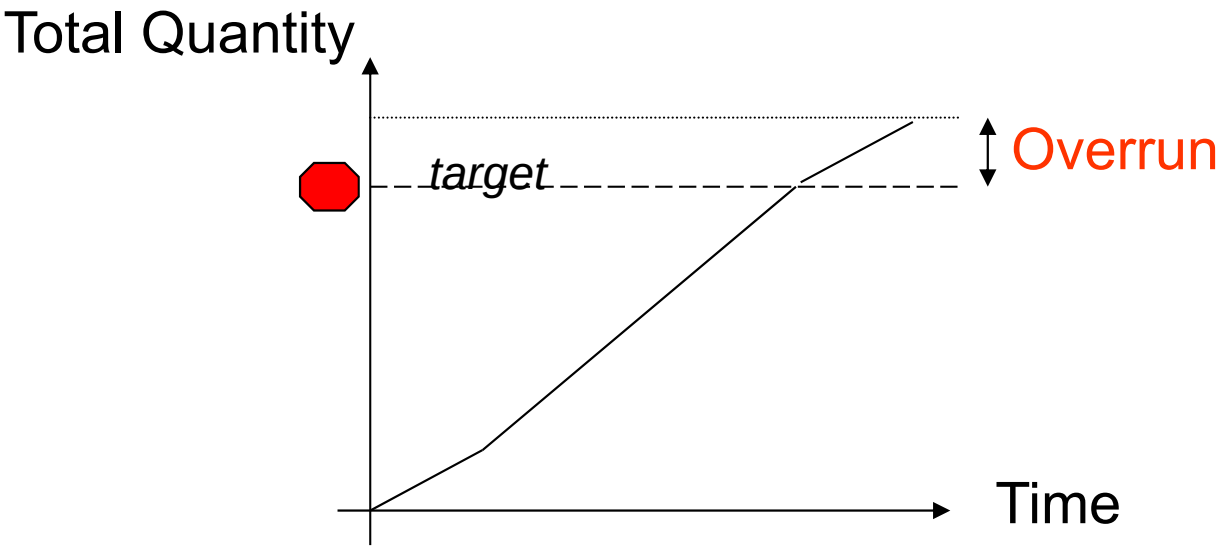
- Is via **two rotary knobs** marked (on ME995) “HUNDREDS” and “TENS" of mls located at the rear of the Batch Controller. (ME995-6 “TENS” & “UNITS”)
- As the batch display will indicate total kilograms of cement at the selected doserate, a calculation must be performed to convert the overrun displayed into actual overflow millilitres of dose.

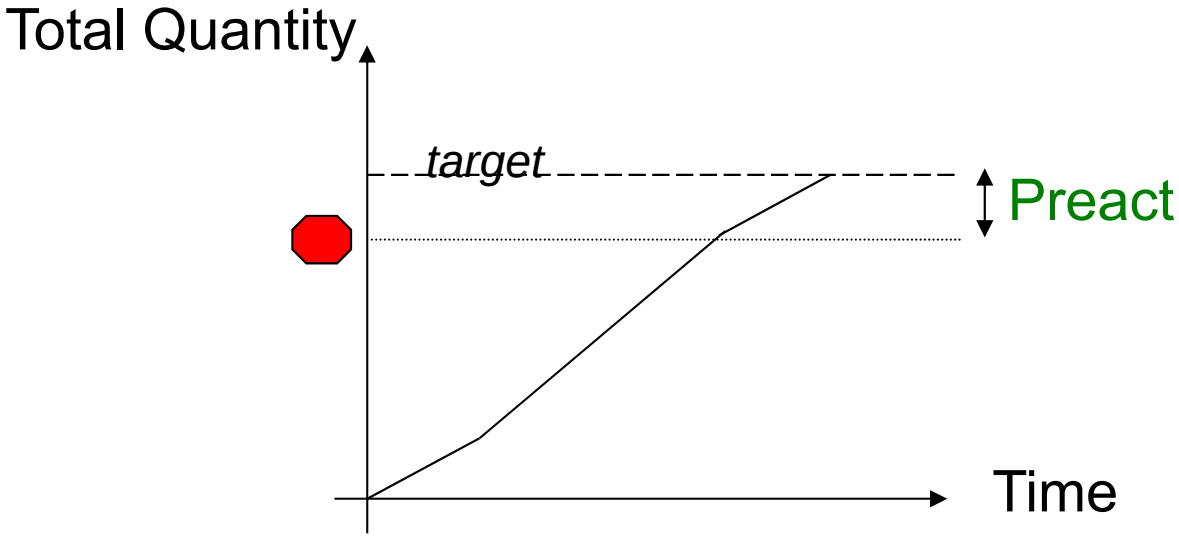


PREACT KNOBS at rear of batch controller

NOTE: You cannot set a batch quantity below any set PREACT value. The controller will not start.

Batch Controller Pre-act





Batch Controller Preact

ME995-6, Example 1

- Total Litres selected was 11.2 Litres
- Actual quantity delivered shown on display was 11.4 litres

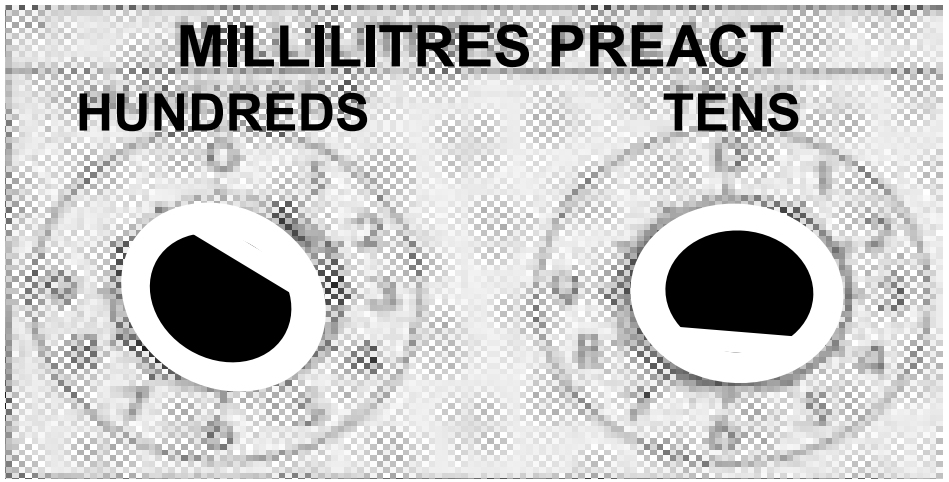
- Overflow is 0.2 Litres

- Set the Preact to TENS=0 and UNITS=2

- The flat shaft with notch is griped and turned to point of desired setting.

ME995-6

ME995-1A, -1 (set on 16 = 160mls.



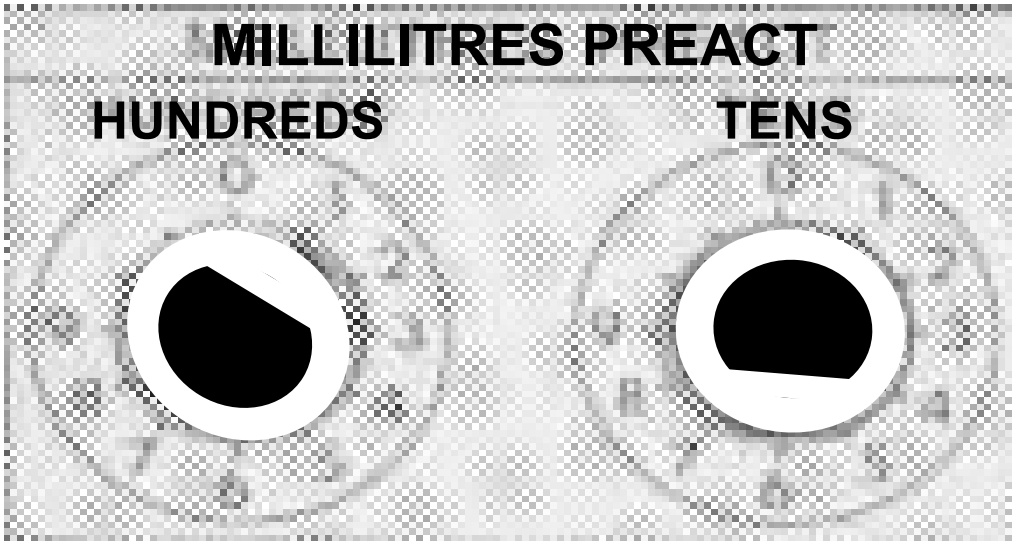
Batch Controller Preact

ME995-3K, Example 1

- Doserate was **10 x 10 mls/100kg** (i.e. 100 mls/100 kg,
- Total kgs cement load selected was 2000kg,
- Actual quantity delivered shown on display was 2060kg (**60 kgs** over at the selected doserate).

$$\text{Dose Overflow} = \frac{\text{overbatch}}{\textbf{60 kg}} \times \frac{\text{Doserate}}{\textbf{10 x 10 mls}} = \frac{\textbf{100 kg}}{60 \times 100 \text{ mls}} = \frac{100}{60 \text{ mls}} = 60 \text{ mls overflow}$$

Set the preact to HUNDREDS=0 and TENS=6 (0x100 + 6x10 = 0 + 60 = 60 mls)



For pure volumetric selection controllers:
Models: ME995-1, -4, -6 and -7 simply if you selected 1000 mls but at batch complete the display shows 1110 mls, then simply set the rear pre-act knobs to 110mls. (Hundreds = 1 & Tens = 0).

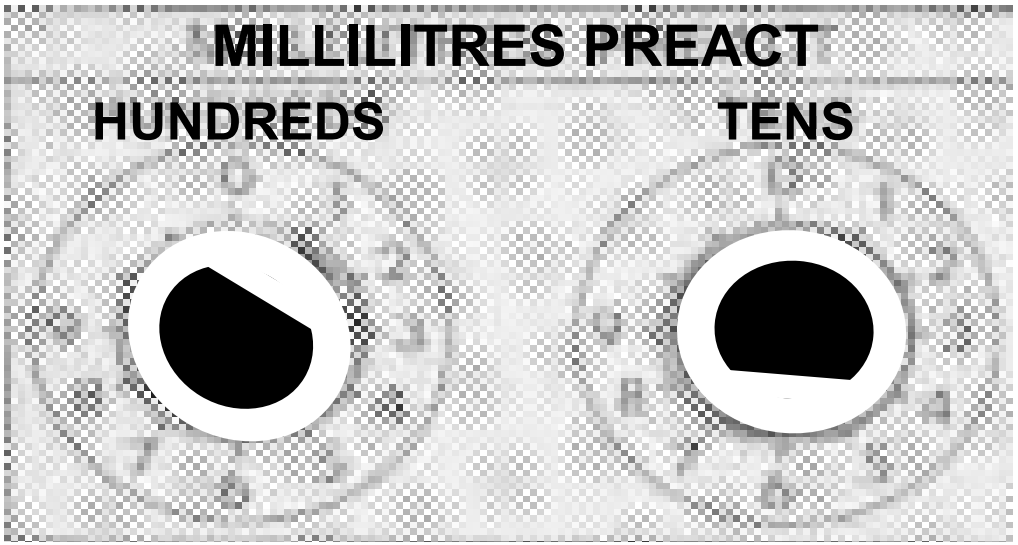
Batch Controller Preact

ME995-3K, Example 2

- Doserate was **27 x 10 mls/100kg** (i.e. 270 mls/100 kg),
- Total kgs cement load selected was 2000kg,
- Actual quantity delivered shown on display was 2060kg (**60 kgs** over at the selected doserate).

$$\text{Dose Overflow} = \underbrace{60\ \text{kg}}_{\text{overbatch}} \times \underbrace{\frac{27\text{x}10\ \text{mls}}{100\ \text{kg}}}_{\text{Doserate}} = \frac{60 \times 270\ \text{mls}}{100} = 162\ \text{mls} = \sim 160\ \text{mls overflow}$$

Set the preact to HUNDREDS=1 and TENS=6 (1x100 + 6x10 = 100 + 60 = 160 mls)



Batch Controller - Service Adjustments to Safety Timings and Limits for ME995

INITIAL START (T2):

CAUTION

- Once start toggle is pressed, controller allows 1.5 seconds for pulses to arrive from the flowmeter.
- If there are no pulses within the 1.5 second time period, controller will shut down the output voltage drive, and will turn on the pulse fail LED and alarm warnings.
- In some applications, the 1.5 second delay may not be long enough, due to slow opening solenoids or slow pressure buildup pumps etc.
- The initial start time period can be increased by soldering a tantalum capacitor in parallel with the standard capacitor value, found on the rear of the PCB.

FLOWRATE (T1):

- If pulses do arrive within the allocated initial start time, the controller then locks in pulserate safety.
- Most ManuFlo Batch Controllers have a standard 30 counts per second (30Hz) pulserate safety setting.
- If the pulses from the flowmeter drop below the 30Hz, the controller will shut down the output voltage drive, and turn on the Pulse Fail LED and alarm warnings.
- The 30Hz standard setting is typical with concrete admixture dispensing systems using MES20 (1ml/1 pulse) flowmeters, where if the flowrate drops below 30 millilitres per second the pulse fail safety will activate. T
- The flowrate (frequency) minimum setting can be adjusted by soldering a capacitor in parallel with the standard capacitor found on the PCB.

Physical mods not needed for ME3000 (is programmable).

Note: The flowrate safety timing is changed if required:

- because of viscosity changes due to seasonal temperatures, or
- by very low flowrate applications, or
- when using flowmeters other than the most commonly used (MES20 20mm 1 pulse/1ml output flowmeter) with Batch Controllers that have K-factor (ppl) calibration.

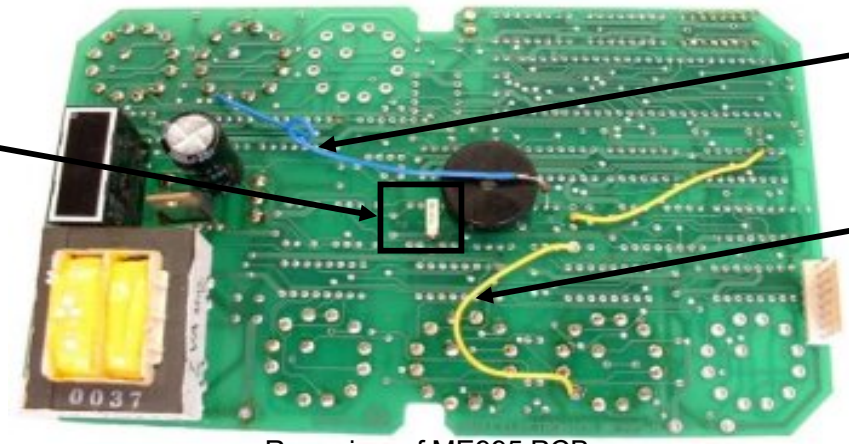
When controller/flowmeter systems are ordered, we supply the safety timing setting to suit your chosen flowmeter, thus always providing the safest possible watchdog system.

BATCH LIMIT (LM):

- The maximum permissible batch is determined by the internal limit value.
- The factory setting is always at the maximum value.
- The limit setting can be reduced by simply desoldering the limit lead wire (connected to the rear of the rotary switch solder pads) and resoldering to set the desired quantity.

DOSERATE LIMIT (DRLM), on Doserate models only:

- The maximum permissible doserate is determined by the internal limit value.
- The factory setting is always at the maximum value.
- The limit setting can be reduced by simply repositioning the limit wire at the rear of the rotary switch solder pads.



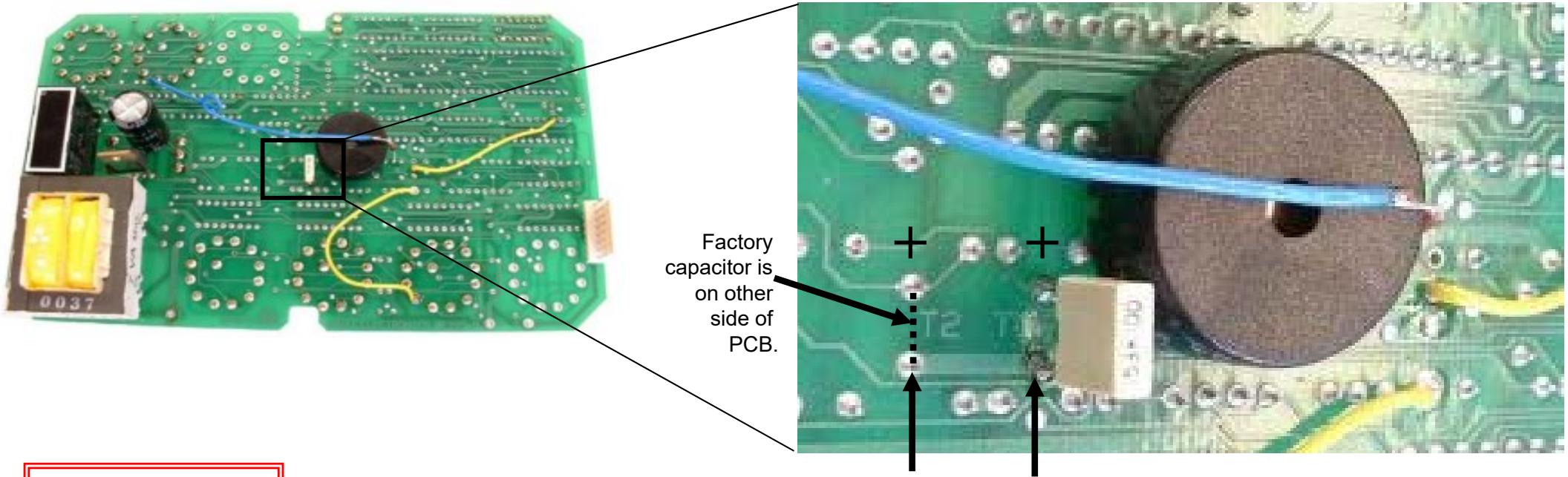
Rear view of ME995 PCB

Note: Setting are programmable in the ME3000.

To access PCB, unscrew 6x screws located at rear of controller case.

Batch Controller – T2 (Initial Start) and T1 (Flowrate) Timing

CAUTION



Physical mods not needed for ME3000 (is programmable).

Initial Start capacitor T2.
Add Tantalum capacitor in parallel to adjust.

T1 flowrate capacitor.
Add capacitor in parallel to adjust.

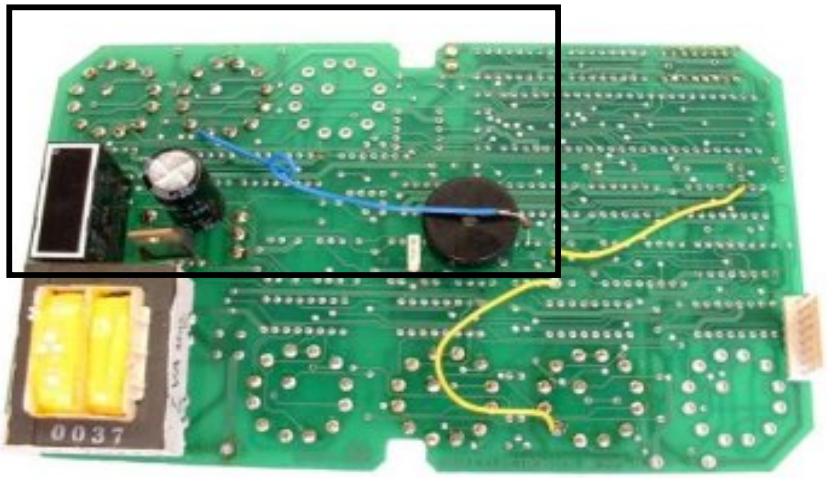
Standard factory set values are T2: 1 µF capacitor, T1: 0.02 µF.
Use the following tables to change factory set values.

Table 1. INITIAL START TIMING (T2)	
Extra Capacitor value	**Extra timing**
1 µF	1.5 seconds
2 µF	3.0 seconds
3.3 µF	4.1 seconds
4.7 µF	5.8 seconds

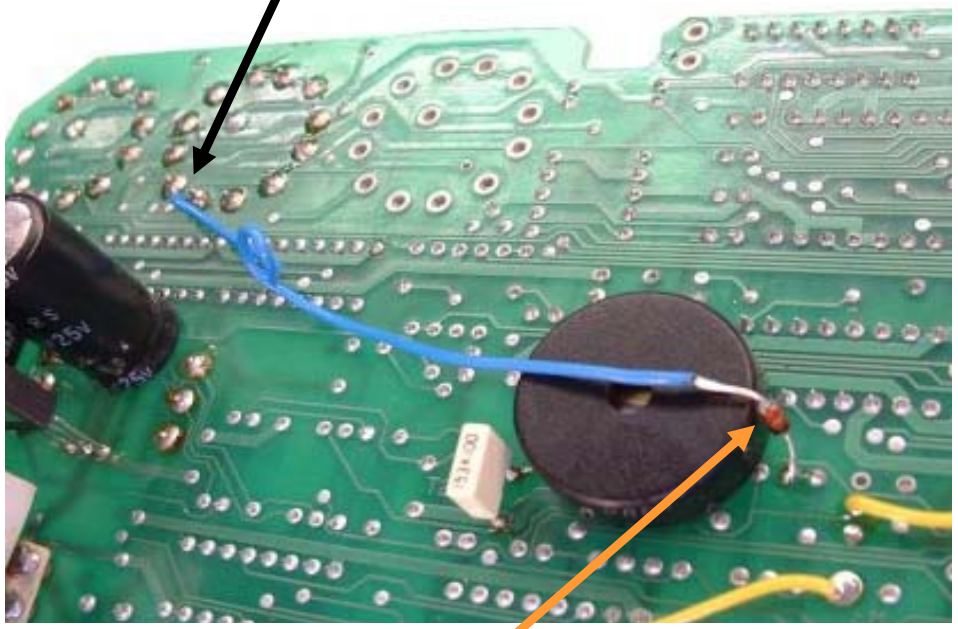
Table 2. FLOWRATE TIMING (T1)	
Total Capacitor value	**Frequency Hz (pulses per second)**
0.01 µF	30 Hz
0.02 µF	25 Hz
0.03 µF	20 Hz (low flowrate MES20)
0.1 µF	07 Hz
0.2 µF	03 Hz
1.0 µF	0.2 Hz (PSM20-T flowmeters)

Batch Controller – DRLM Dose Rate Limit (Doserate Models Only)

To change doserate limit, move this end of the DRLM limit wire to a new pad on the rotary.



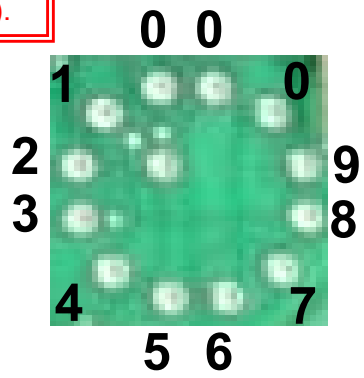
Doserate Limit wire is connected to the right-most installed Doserate dial (as seen on this view).



1N4148 signal diode

Physical mods not needed for ME3000 (is programmable).

Doserate Limit Values, According to DRLM Limit Wire Position

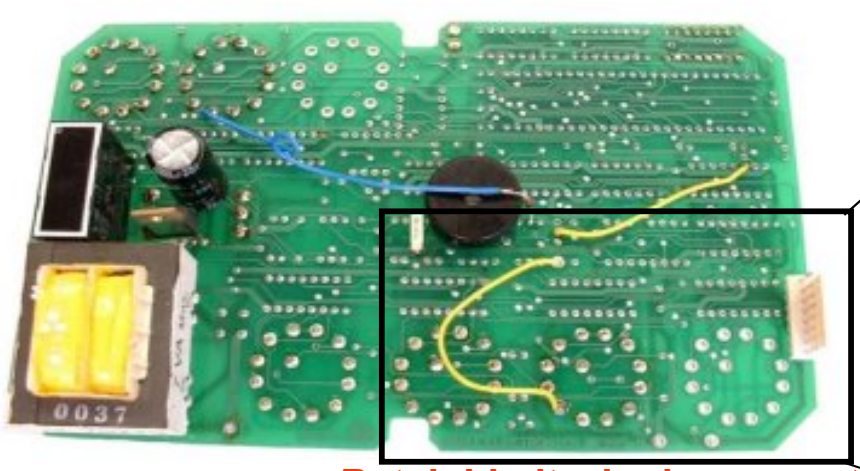


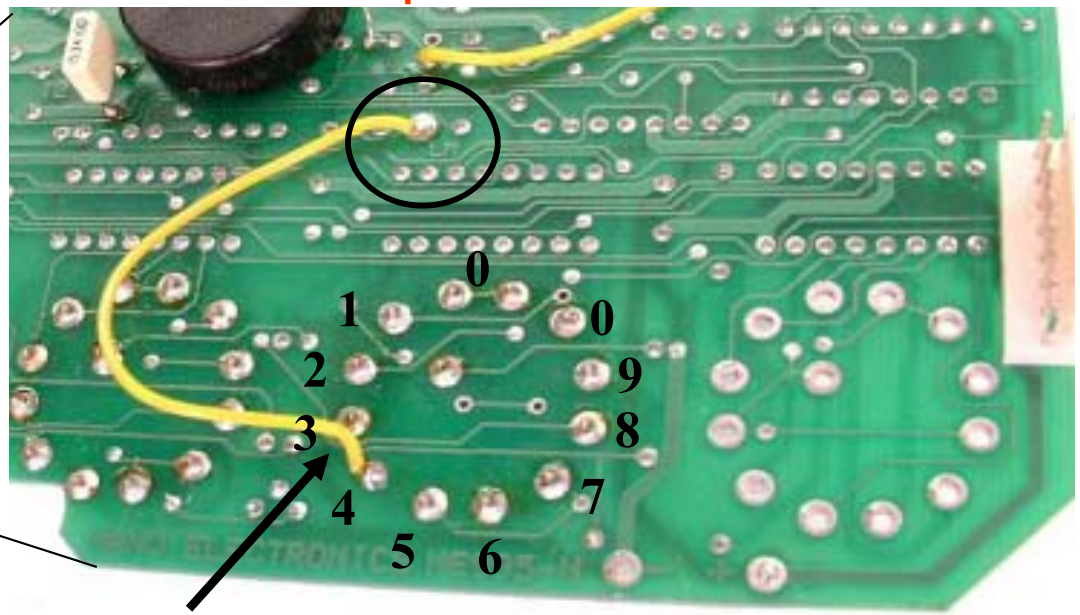
		ME995 model							
		-2	-2H	-2C	-2CH	-3	-3H	-3K	-3KH
	units ->	ml/m3	ml/m3	ml/m3	ml/m3	ml/100kg	ml/100kg	ml/100kg	ml/100kg
	0	0	0	0	0	0	0	0	0
P	1	100	1 000	100	1 000	100	1 000	100	1 000
o	2	200	2 000	200	2 000	200	2 000	200	2 000
s	3	300	3 000	300	3 000	300	3 000	300	3 000
l	4	400	4 000	400	4 000	400	4 000	400	4 000
t	5	500	5 000	500	5 000	500	5 000	500	5 000
l	6	600	6 000	600	6 000	600	6 000	600	6 000
o	7	700	7 000	700	7 000	700	7 000	700	7 000
n	8	800	8 000	800	8 000	800	8 000	800	8 000
	9	900	9 000	900	9 000	900	9 000	900	9 000

Batch Controller – LM Batch Limit

CAUTION

Start pad of Limit Wire is marked LM





Batch Limit wire is connected to the right-most installed batch dial
(as seen on this view).

Physical mods not needed for ME3000 (is programmable).

To change batch limit, move this end of the **LM limit wire** to a new pad on the rotary.

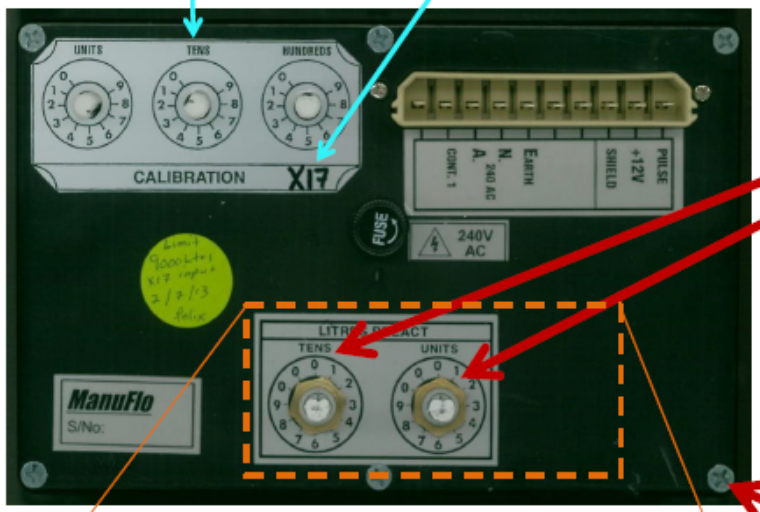
Batch Limit Values, According to LM Limit Wire Position

		ME995 model														
		-1	-1A	-2	-2H	-2C	-2CH	-3	-3H	-3K	-3KH	-4	-6	-7	-7D	-7H
	units ->	mls	mls	m3	m3	m3	m3	kg	kg	kg	kg	L	L	L	L	L
	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.000	0.0	0	0.0	0
P	1	10 000	1000	1.0	1.0	1.0	1.0	1000	1000	1000	1000	10.000	10.0	1000	100.0	10 000
o	2	20 000	2 000	2.0	2.0	2.0	2.0	2 000	2 000	2 000	2 000	20.000	20.0	2 000	200.0	20 000
s	3	30 000	3 000	3.0	3.0	3.0	3.0	3 000	3 000	3 000	3 000	30.000	30.0	3 000	300.0	30 000
l	4	40 000	4 000	4.0	4.0	4.0	4.0	4 000	4 000	4 000	4 000	40.000	40.0	4 000	400.0	40 000
t	5	50 000	5 000	5.0	5.0	5.0	5.0	5 000	5 000	5 000	5 000	50.000	50.0	5 000	500.0	50 000
l	6	60 000	6 000	6.0	6.0	6.0	6.0	6 000	6 000	6 000	6 000	60.000	60.0	6 000	600.0	60 000
o	7	70 000	7 000	7.0	7.0	7.0	7.0	7 000	7 000	7 000	7 000	70.000	70.0	7 000	700.0	70 000
n	8	80 000	8 000	8.0	8.0	8.0	8.0	8 000	8 000	8 000	8 000	80.000	80.0	8 000	800.0	80 000
	9	90 000	9 000	9.0	9.0	9.0	9.0	9 000	9 000	9 000	9 000	90.000	90.0	9 000	900.0	90 000

ME995-7 or -7D

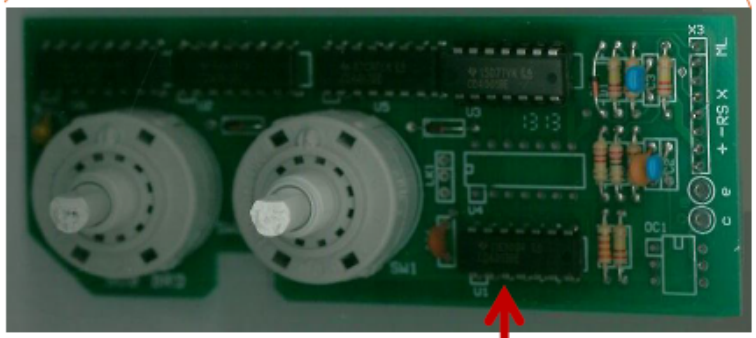
To convert a x17 Batch Controller to a x1 Batch Controller

For use with various unity or high pulse flowmeters e.g. MES20 / 25 etc



(1) remove the 2 washe

(2) unscrew the 6 back panel screws, and remove back panel, to expose the circuit board that the 2 dials are on.



(3) use side cutters to cut pin 3 of chip U1.

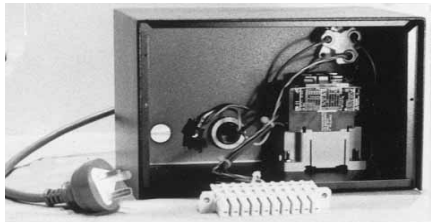
pin 3 of chip U1

(4) Re-assemble.
(5) Change "x17" to "x1" on the calibration sticker.

(6) for use with a paddlewheel sensor in a 25mm pipesize, set Batch Controller calibration dials to Hundreds=0, Tens=7, Units=5

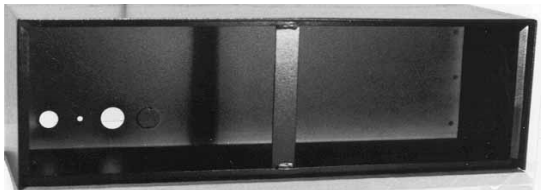
Batch Controller Housing Boxes

SHB - SINGLE HOUSING BOX

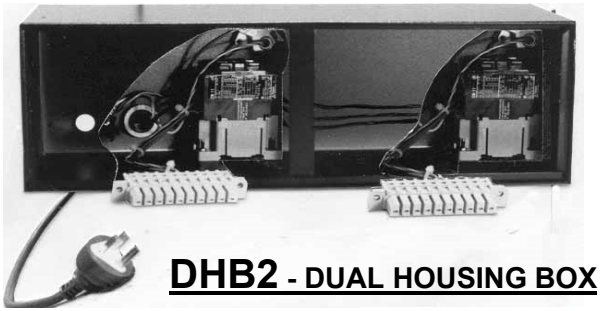


SHB1 - SINGLE BOX WIRED

- The SHB/DHB housing boxes are for wall or bench mounting ME995 Batch Controllers.
- Metal black powder-coated paint finish.
- These boxes are also available fully wired with 110 or 240vac 15amp industrial contactors, pump plug-in 240vac power entries, power cord and 10-pin Weidmuller mating plug.
- Also available in a terminal strip entry version.



DHB - DUAL HOUSING BOX



DHB2 - DUAL HOUSING BOX

Order Code	Description
SHB	Single metal box (houses one ME995)
SHB1	Single, with contactor, pump outlet
SHB2	Single, with 2 contactors, 2 pump outlets
DHB	Dual metal box (houses two ME995s)
DHB2	Dual, with 2 contactors, 2 pump outlets
DHB3	Dual, with 3 contactors, 3 pump outlets
-T	Terminal strip entry (in lieu of outlets)

HB2500/2510 - WATERPROOF ENCLOSURES

Order Code

HB2510 **IP65 Enclosure with S/S316 hinges**

Options

-SSR Start/Stop/Reset command buttons.

-C240 Contactor, internally wired. 15 Amp, 240vac, 1phase.

Select a good viewing AND operating position for the Batch Controller.

Batch Controller Housing Box - Use

Do not install ME995 / ME3000 with SHB/DHB metal boxes in areas exposed to rain or wash-down areas. If so use the HB2510 IP65 waterproof/dust proof box

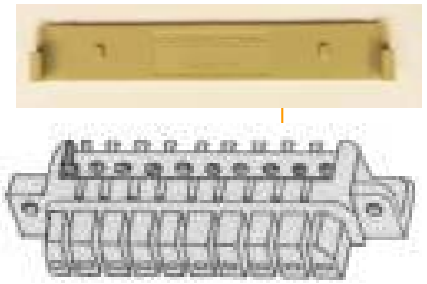
ME995 Series Batch Controllers - Connections

Calibration knobs HTU (only on ME995-7, ME995-7D & -7DS), to set to flowmeter's K-Factor (the pulses/Litre).

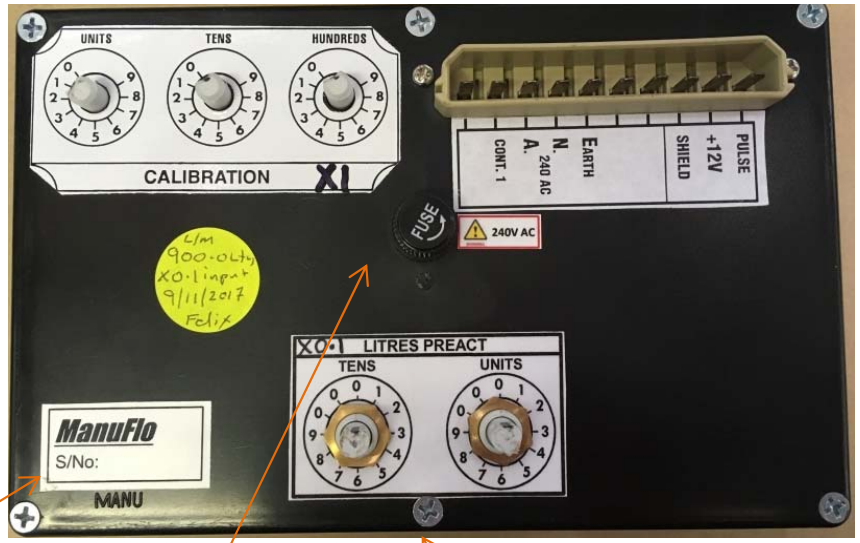
Weidmuller 10-pin recepticle – changeover and replacement is instant with no rewiring necessary.

Rear connector insulator cover

New



REAR VIEW



Serial No.

Fuse

Preact knobs - to adjust for overrun.

SPECIFICATIONS

Power supply	220-260 vac (optional 110 vac or 12-24 VDC)
Output to flowmeter	12 VDC up to 100mA
Relay outputs	Max. 240 vac, 30 VDC 1 Amp
Frequency input	5 KHz: x1 input, 340 Hz: x17 inputs
Display	7 segment LED (14mm H)
Connection	10-pin Weidmuller mating plug and socket
Fuse	1 Amp (5 x 20mm case)
Batch selection	Visual rotary select switches
Batch commands	Push toggle switches
Mounting	Panel mount
Instrument housing	ABS hi-impact case
External dimensions	206 L, 130 H, 90 D mm
Panel cutout	190 L, 122 H mm
Weight	1 kg

Batch Controller/Housing Box: 240vac re-labelling

ME188/995/999/3000 WEIDMULLER PLUG 240vac Upgrade

The beauty of the ManuFlo pluggable batch controller modular systems now in use for over 40 years (since 1978) is that any faulty/malfunctioning batch controller can be easily removed/swapped, via its STV Weidmuller pluggable connector system and replaced with a another ME-series batch controller. They are a very safe/sturdy plug set for 240vac wiring. (Without having to removing wires or having to call an electrician).

This rapid replacement ability has allowed countless times to troubleshoot by swapping with another ME995 controller, where the batcher needs to complete a load of concrete so that the concrete trucks can deliver to construction sites on time.

This is increasingly important in country towns or remote sites, where rapid problem solving is required.

(There is available a further protection cover that's clips on top of the plug; Part # WC)

The procedure to swap controllers is to simply remove the two front screws, pull out the controller and then grabbing the Weidmuller plug at opposing ends pry apart the mating plugs. (Never pull apart plugs by the wires).

Due to the nature of the design of the plug, the chance of ever receiving an electric shock from frayed wires etc, if following this procedure is avoided. It's been common procedure for over 40 years, without any incidents.

But with updated OH&S in industry sites and procedures... we suggest the following upgrade option to the ManuFlo equipment;

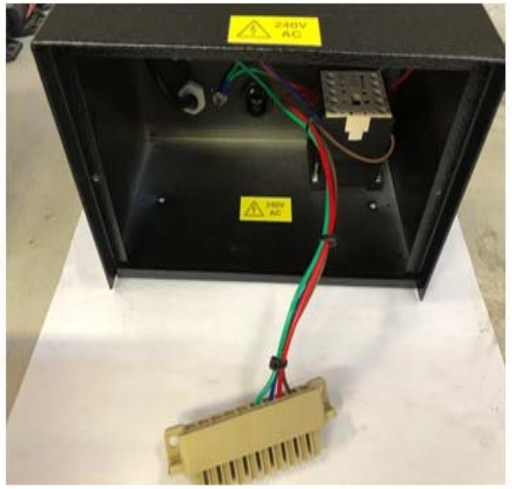
WE RECOMMEND:-

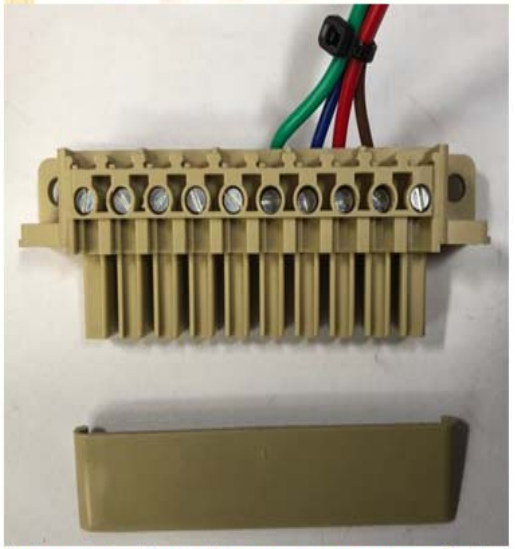
1/ Sticking 240vac labels inside/outside the housing boxes and on the top of the batch controllers.

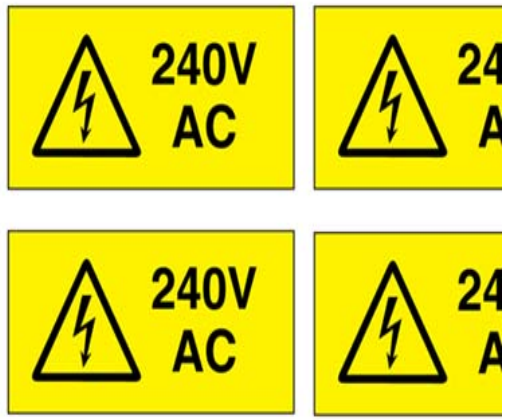
2/ Upgrading the plug with the clip on cover (Part# WC). –as shown below diagrams.

We must bear in mind we have equipment out there still in use over 30 years old that predates a lot of today's current OH&S procedures.

So as a consequence the above procedures are recommended to satisfy any OH&S concerns.



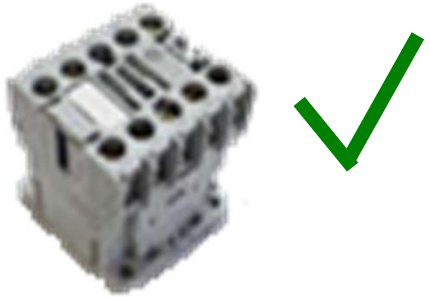




Extra protection clip-on covers are available. (Part# WC)

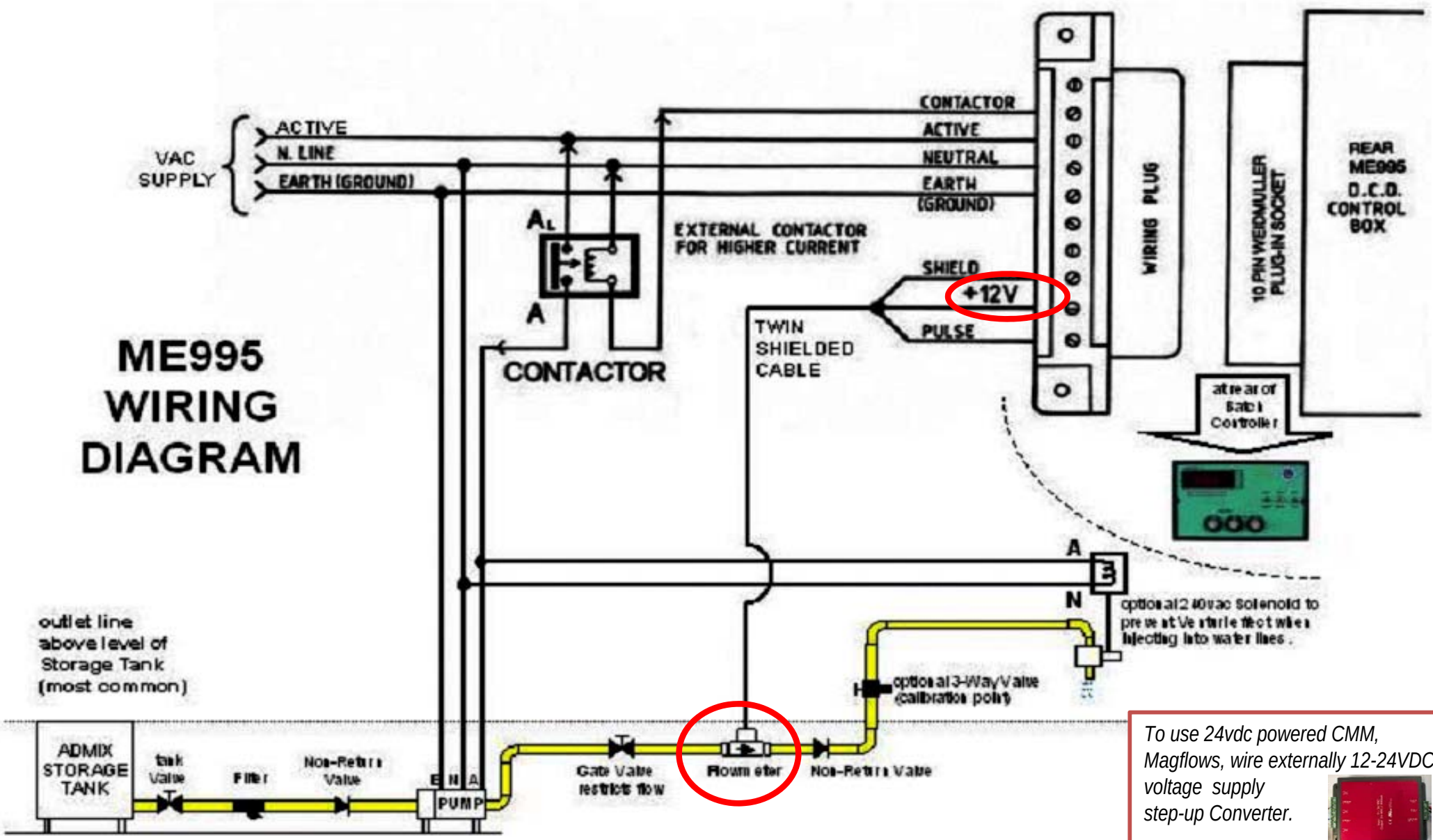
Batch Controller Wiring - Guide

- Remove the detachable Weidmuller **10-pin plug** from the rear of Batch Controller.
- Connect the **flowmeter signal cable** into the 10pin Weidmuller plug. When wiring the flowmeter, use 2-core shielded cable (use more cores if wiring more flowmeters) - this will supply the flowmeter with 12VDC from the Manu Batch controller.
- Wire the **240VAC supply cables**.
- Wire the **Active/contact drive, Neutral and Earth from the solenoid valve** or return from the external contactor if driving a pump. If starting a pump, make sure the contactor is of sufficient amperage rating to handle the pump current draw (e.g. 10 Amps for Onga413 pump).
- **Don't use cheap plug-in relays in your installation** – they cannot handle pump surge currents and can stick/fuse. Must have industrial grade contactors
  (available from ManuFlo: **Order Code C240**, rated 3kW 1.5hp).



- Consider wiring an **override button** (N.O. with spring return) for manual batching or top-up of admix, which will be counted by the controller display.
- **Power up the system**. Reset and start a number of times to prime the system, until fluid appears at the outlet line and the Batch Controller digits begin counting.

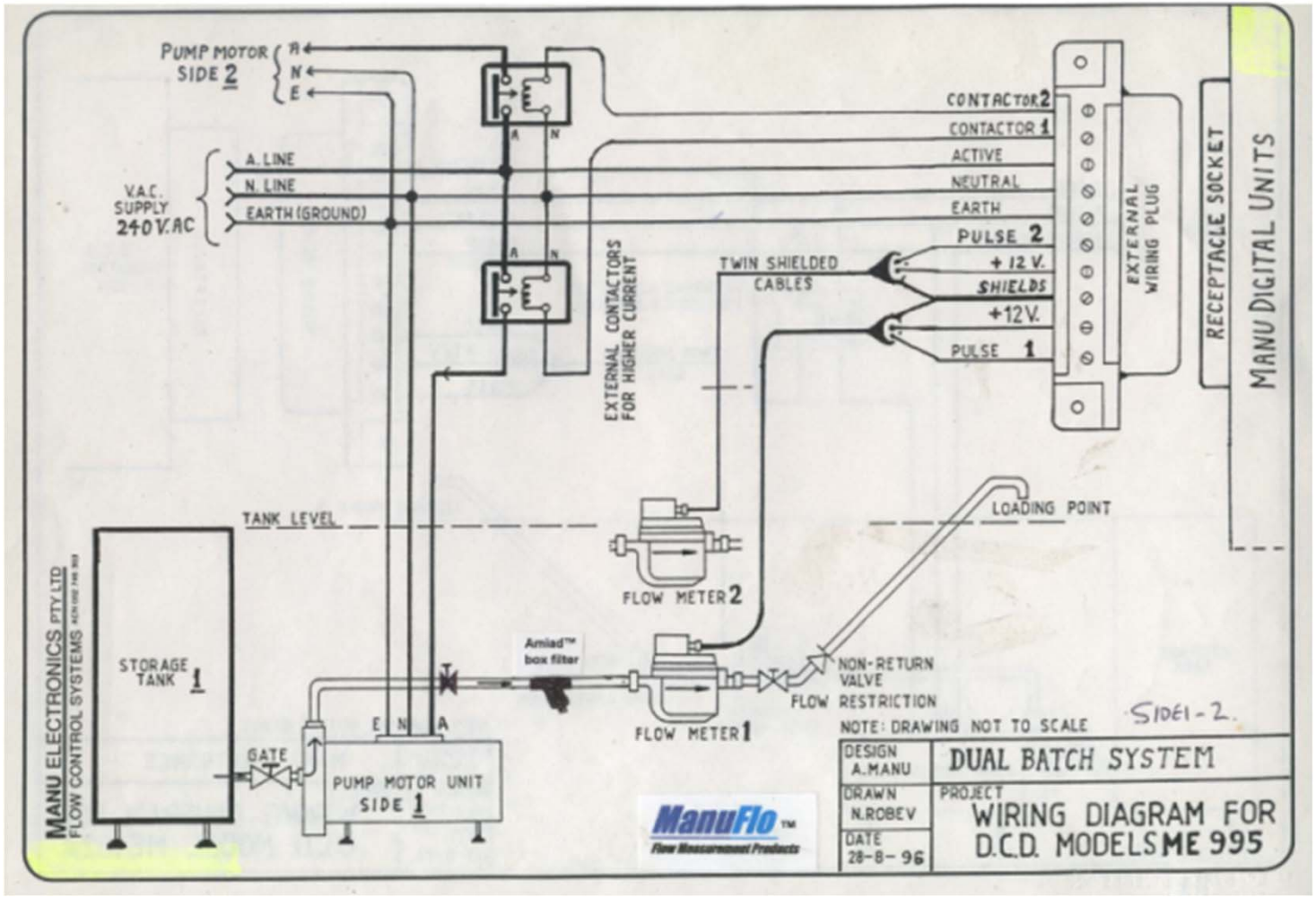
ME995 Batch Controller Wiring - 240vac i/o standard



To use 24vdc powered CMM, Magflows, wire externally 12-24VDC voltage supply step-up Converter.

ME995 Batch Controller Wiring

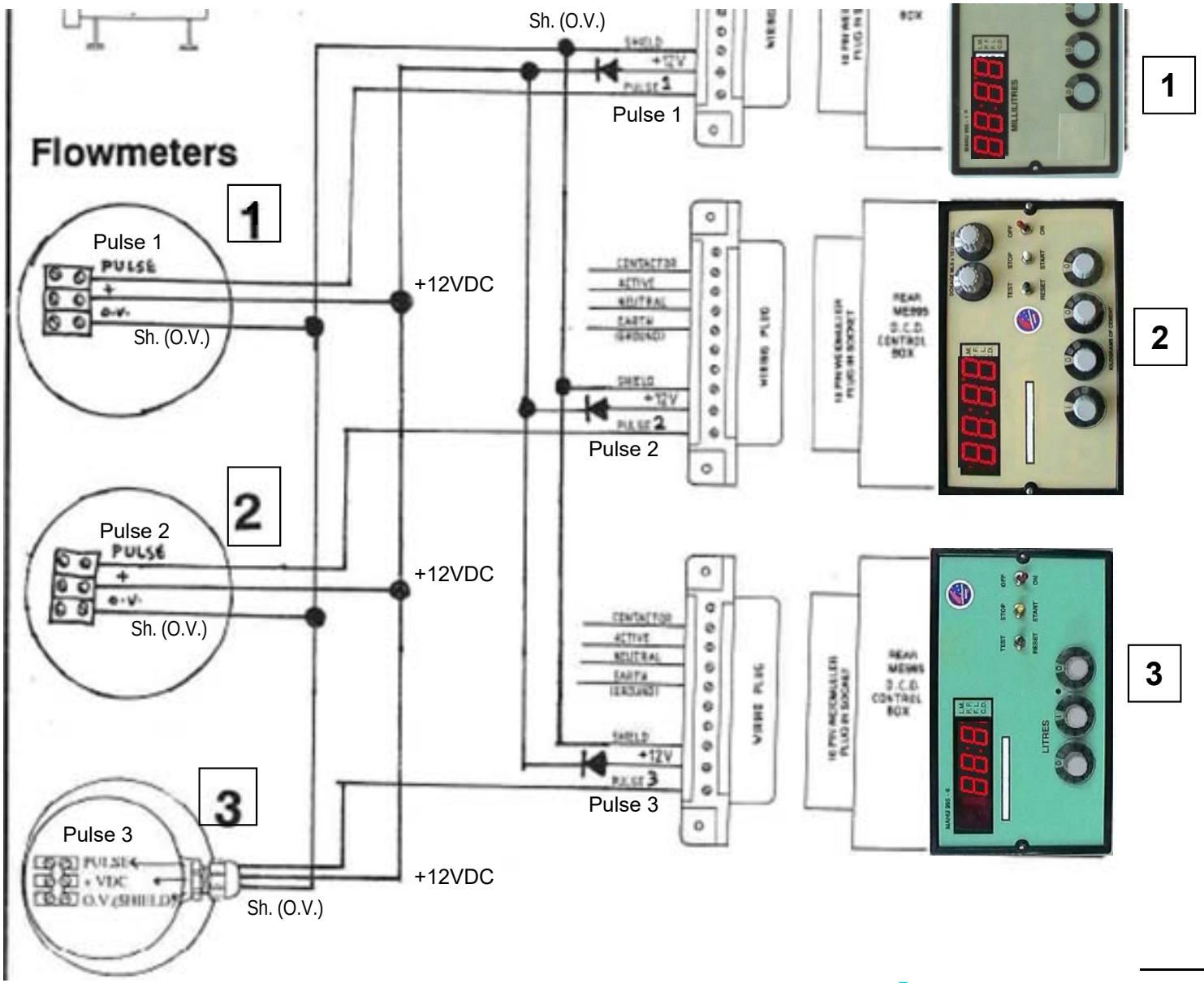
- **Side1-2 : two way 2 product batch option.**



ME995-4 with S1-2 pictured

Controllers can be configured to dispense 2 admixture products 2pumps/2flowmeters via 2way product control switch (# S1-2)

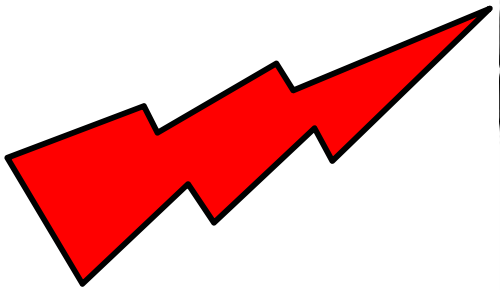
ME995 Batch Controller Optional Wiring using one cable

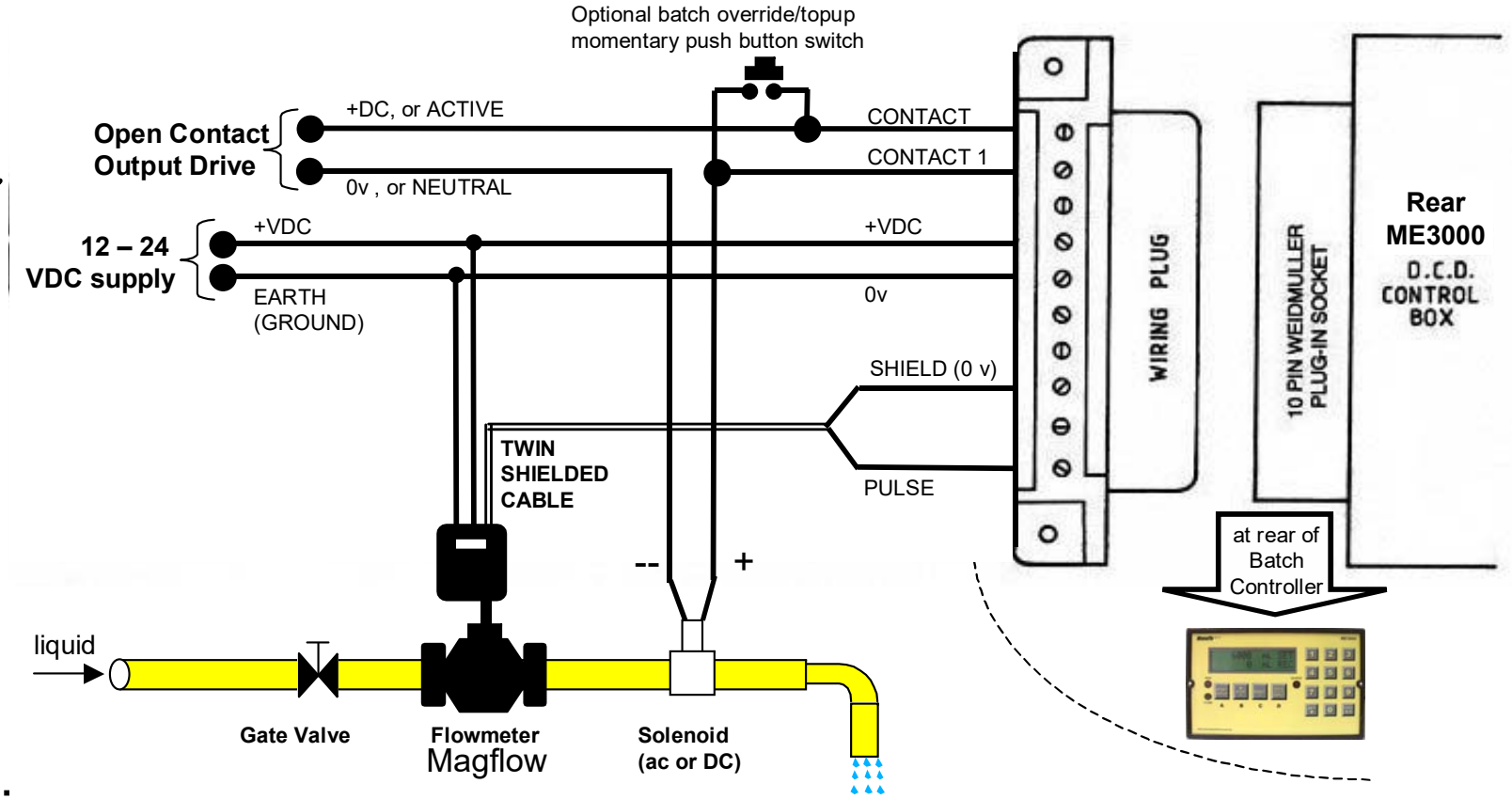


When using one multicore shielded cable:
If deciding to use one common wire from the ME995 Batch Controllers for the +12VDC supply to power two (2) or more flowmeters, then you must NOT connect all +12VDC supply lines together unless you install 1N4004 heavy duty diodes as per the diagram.
(the shield (o.v.) wire can be all connected together).

Diode Symbol

ME995/ME3000 - Updates
NEW Voltage Configuration Options





Now available with:

- 110vac, 24vac or 24VDC powered options
- Open contact output drive (to drive any external voltages)

WARNING: The Various configured voltage options are NOT interchangeable with the standard 240vac models.

Batch Controller Calibration Test

Volumetric Calibration Test should be performed when commissioning installation

- place a **calibrated vessel** at the discharge point
- on the Batch Controller, **select an amount** of liquid e.g. 1000 mls.
- press Reset, then Start to **batch** the quantity
- at the calibrated container, **check** that the amount dispensed is as requested.

An overflow may occur due to the inability of the pump to stop instantly. The amount of overflow will depend on how fast the liquid is being dispensed and/or the closing time of the solenoid valve. The Batch Controller will count the overflow as part of the displayed total dispensed.

- if the system is totally controlled via PLC/Computer, overflow will be adjusted by the computer; otherwise,
- where a ME995 series Batch Controller is fitted with a Preact, simply set the Preact to the amount of overflow i.e

overflow =
(actual amount dispensed, as shown on the Batch Controller display)
minus (amount requested).

If required:

- slow down flow velocity by using a restriction gate valve;
- avoid over-batching by using the Preact function, or installing a quick-acting solenoid valve.

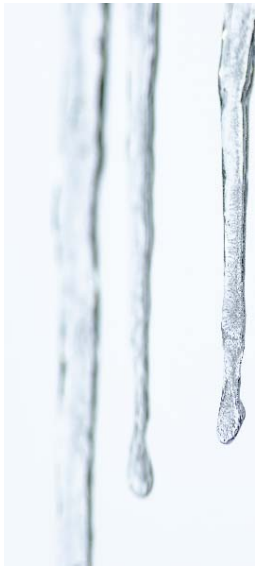
Note: If the flow is restricted excessively, Batch Controller Pulse Fail circuitry will shut down the system for safety reasons, in which case open up the restriction gate valve.

Batch Controllers - Maintenance

- A calibration check should be performed periodically (say every 6-12 months).

- Return for service after 5-10 years, especially for manual plants.

- In winter, liquid can thicken because of the cold, and so can flow slower.
  If Pulse Fail continually occurs in winter on a ME995 series Batch Controllers (Even ME2008's),
  THROTTLE UP PUMP SPEED or adjust the pulsefail flowrate timing (T1).



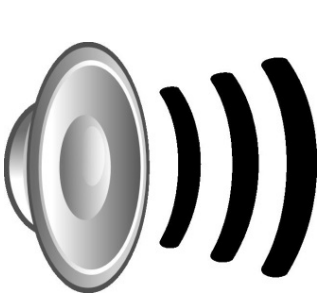
Note: The ME3000 Batch Controller (and ME2008) are programmable, so do not require any hardware modifications.

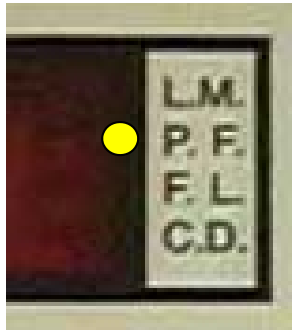
Batch Controllers – Troubleshooting

IMPORTANT

Questions to ask the batcher upon a batching problem:

- Which LEDs are on?
- Describe what faults are evident?





•If batcher gets Low Flow Alarm on two successive attempts at batching, then:
MOVE THE TRUCK MIXER AWAY FROM THE LOADING POINT
stop using the Controller; as each attempt doses 2 seconds worth of chemical into the mix.
record the quantity displayed on the ME995; and
ring your local admixture supplier or service agent for advise/service (or attempt to address).

THIS WARNING GUIDE SHOULD BE DISPLAYED AT PREMIX PLANT FOR THE BATCHER / OPERATOR !!

Batch Controllers – Safeguards

ME995 BATCHING DISPENSER

IN CASE OF ALARM WARNING:-

- **If any of the safety features are triggered, the alarm will sound.**
- **The LED's warning indicators will illuminate with PF or LM.**

- DO NOT push RESET immediately - observe display and take note of the batch display reading.
  then push RESET, redial residue quantity required to be batched to complete the load.
- **If batcher gets an Alarm again at batching, then**:

- MOVE THE TRUCK MIXER AWAY FROM THE LOADING POINT
  - **stop using the controller**; as each attempt doses 2 seconds worth of chemical into the mix.
  - **refer to the ManuFlo website "technical support ME995" or your contact local admixture supplier** for advise/service.

- **LIMIT (LM) LED** - illuminates if:
  - batch cycle reaches locked internal maximum limit, or internal fault.
- **PULSE FAIL (PF) LED** - activates if:
  - no flowmeter pulses arrive within initial 1.5 seconds (variable), or
  - pulses are interrupted or intermittent during batch cycle (blocked flowmeter, seizing pump, valve closed, cut signal wire).
- **FLOW (FL) LED** - indicates pulses coming from field flowmeter.
- **CONTACT DRIVE (CD) LED** - output drive activated to pump or solenoid.

Audible ALARM sounds:
- momentarily upon completion of batch cycle,
- continuously if PF or LM occurs LEDs are activated or if overflow runs excessively past selected batch quantity.

Warning: if CONTACT or FLOW LED indicators are on,

but contoller is not counting, discontinue use, call for service.

THIS WARNING GUIDE SHOULD LAMINATED AND BE DISPLAYED AT PREMIX PLANT FOR THE BATCHER / OPERATOR !!

Batch Controllers – Troubleshooting

Incorrect Batching from Selected to LED display

1. The selector knob number dials on the Batch Controller may not be aligned correctly, and therefore do not correspond to the rotary switch numeric values.
2. To test, set all numbered dials to the zero position, then press the RESET toggle. The alarm should beep momentarily. This will indicate correct alignment of dials. If alarm does not beep, this indicates incorrect alignment of numbered dials.
    - To rectify, remove the grey-colored cap from each dial, the grip nut is now exposed, un-tighten and the knob grip will release from switch shaft and pull off knob.
    - Check that the exposed switch shaft flat side notch is in horizontal. If not, turn shafts to horizontal as pictured above and refit the numbered dial knob to the zero number setting.
    - For dosage switches, position to zero and push up hold the TEST button. Digits should not count (except in the ME995-3 model). If digits count, then remove grey knob and check the numbered dial alignment –same procedure as above.
3. If batch controller is tested and found to be operating correctly, then proceed to checking and testing flowmeter components.

Batch Controllers – Troubleshooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
o No power to batch controller, displays not on	o Blown fuse or fuse holder not tight/broken o +12vdc and O.V. shorted o No main power supply o Broken transformer	o Check fuse, tighten fuse holder (at rear of controller) o Check wiring, rear of controller & at flowmeters, replace cables. o Check power supply, check wiring o Return to ManuFlo for repair
o Pulse fails at start of batch	o Air pocket o Restriction gate valve closed o Empty liquid tank o Pump not turning o Solenoid valve not opening o Seized flowmeter chamber o Flowmeter pulsehead faulty o Signal cable cut or bad joint o Pipes/hoses clogged or air pocket. o Buildup coagulated admix at discharge point o **Seized PUMP due to sticky admix**	o Prime line by shorting output drive (C=Contact & A=Active) o Open gate valve o Check liquid level o Check and service pump o Check and service solenoid valve or non return valve stuck closed . Flush out the flow-line, purge air pocket o Service and clean flowmeter chamber, replace if required o Replace with new pulsehead, or connections corroded. o Check signal cable o **Hit the PUMP with a Rubber mallet to loosen it, then re-batch. Failing that then strip/clean or change the pump**
WARNING: In any pulse-fail or repeat malfunction condition, remove the truck mixer from the sock loading point.		

NOTE: In winter, liquid may flow slower causing Pulse Fail. We recommend:
- Opening up the restriction valve ***OR***
- Fitting the capacitor to change Batch Controller T1 timing

Flowrate lower than average speeds . Pipes hoses are clogged. Clogged near SOK -- pump has a lot of rubbish in the centrifuge rotor -- clean out pump -- gate valve seized -- rubbish jammed in non return valve -- suction side of pump issues -- piping blockages etc. change to PD pump -- close bypass valve if installed to increase pressure of flowrate.

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PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
o Pulse fails during batch cycle	o Flowrate too slow o Flowrate too fast o Blocked filter restricting flow o Measuring chamber clutching	o Open restriction gate valve or increase flowrate pulse fail timing capacitor (see service guide). o Chamber clutching, slow down flowrate via restrictor valve. Check flowmeter specs for performance operating range o Cleanout filter o Cleanout chamber or replace o Clean, service or replace the flowmeter parts
o Display digits count slowly after batch complete	o Non return valve faulty (jammed open) o Vibration	o Clean, service or replace o If Vibration – eliminate or use new MES-DSP Pulseheads.
o Batch target display counter above batch selection	o Flowrate too fast, excessive overflow	o Turn down gate valve to restrict flowrate or set preact (overflow deduct) function to compensate (ME995 models –located at rear of unit) o Reduce delivery pipe diameter
o During calibration test, more admix collected than indicated	o Flowmeter chamber part missing o Chamber excessively worn, liquid is slipping through without registration o S.G. below 1.0 o MES20 under excessive pressure with AEA slippery admix	o Check flow chamber, check O-rings are seated correctly (MEK20/MES20 roller bush or O ring) o Replace with new chamber, recheck calibration o Replace chamber and restrict flowrate or recalibrate via controller (certain models only) or recalibrate via card o Place restriction valve after pump and prior to flowmeter
NOTE: After servicing any flowmeter, always perform a volumetric calibration test. Make sure glands are sealed, pulse cable is lopped downward, and meters are under cover and protected from water ingress.		

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PROBLEM	POSSIBLE CAUSE	SUGGESTED SOLUTION
o Less admix collected than displayed	o Possible syphoning effect if fed (mixing) into flowing water line o Liquid flows backward after batches	o Fit ball valve solenoid or do not feed into flowing water line, or check valve o Non-return valve faulty, service or replace
o Controller starts counting when power switched on, does not stop at batch complete	o Active and contact power drive short circuited o Contactor sticky or fused	o Short circuit on PCB, check PCB or replace o External pump contractor relay fused or need higher ampere rating, replace contractor
o Controller not counting but flow and/or contact drive LED's are on	o Controller malfunction, IC failure	o Replace controller, ring ManuFlo for urgent advice
o Controller counts although pump off (contact drive LED off)	o Dried out main electro capacitor, leads to unstable +12VDC line to circuit. o Moisture on PCB –return to ManuFlo dry out clean	o Replace electrolytic capacitor (Pre ME995 units)
o Controller counts up a batch cycle but no admixture delivered	o Flowmeter (MES) measuring air	o Can occur with positive displacement pumps. Fit a recirculation line on inlet/outlet of pump. See install guide brochure.
o Controller Limit "LM" LED light triggers disabling controller or spike of counts appears on display counts suddenly when engaging start toggle	o Spike caused by 240vac contactor coil	o Fit a 0.1uF 275vac> mains capacitor across the coil to filter initial start spikes

Use UMT-8 Tester to check the functions of the inputs.